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Railway Age

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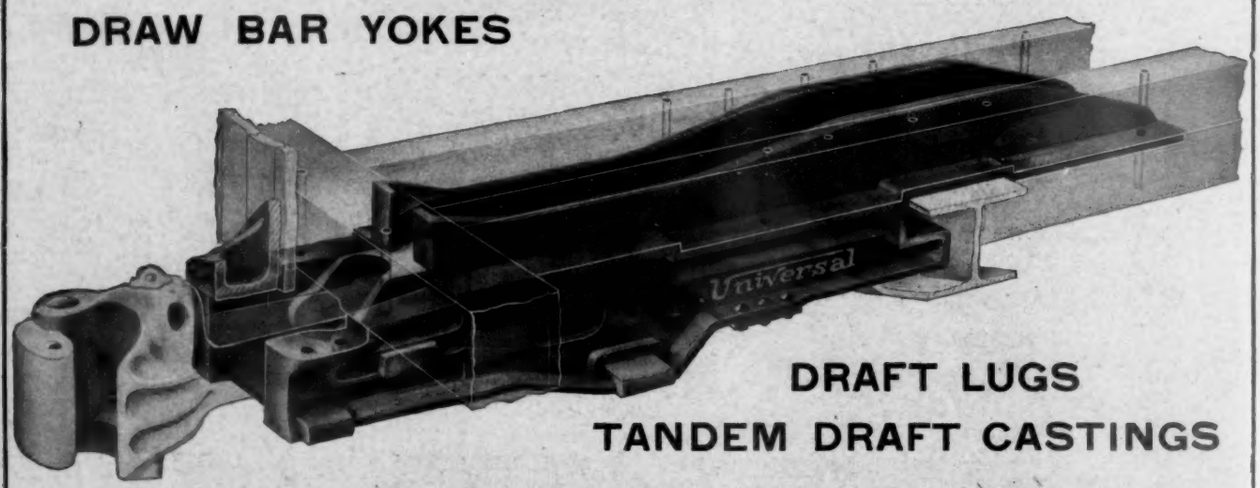

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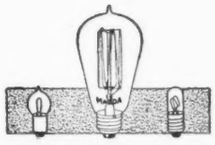

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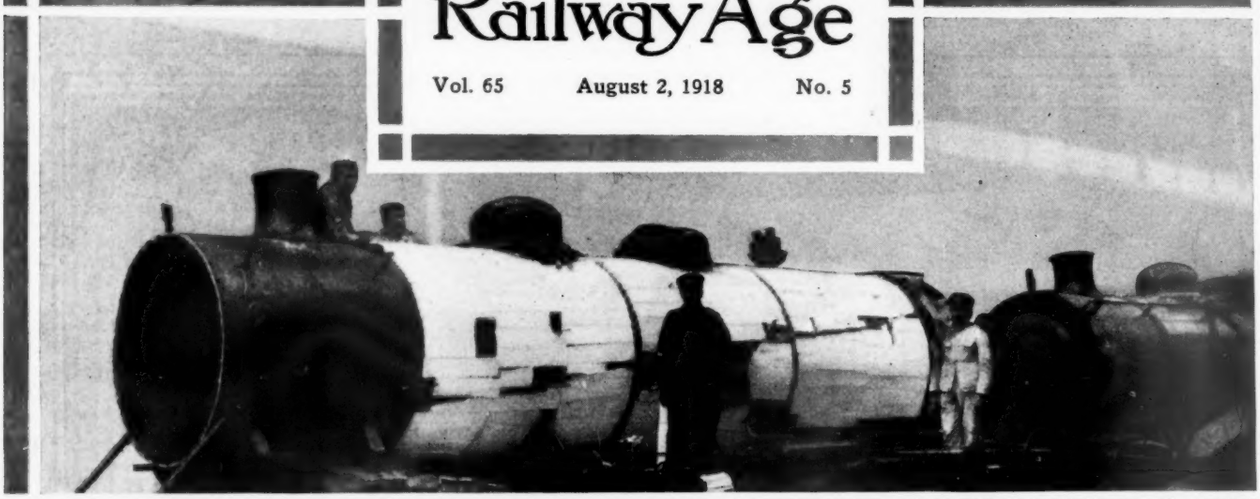
Railway Age

Vol. 65 August 2, 1918 No. 5



Lagging an American Built Engine in a British Railway Shop in France. British Official Photo from Underwood & Underwood, N. Y.

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WE GUARANTEE, that of this issue 8,000 copies were printed; that of these 8,000 copies 6,777 were mailed to regular paid subscribers, 190 were provided for counter and news companies' sales, 311 were mailed to advertisers, 433 were mailed to exchanges and correspondents, and 289 were provided for new subscriptions, samples, copies lost in the mail and office use; that the total copies printed this year to date were 284,742, an average of 9,185 copies a week.

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EDITORIAL

Railway Age

It is reported that the brotherhoods of train employees and the shop men's organizations are displaying a more active interest in safety first work since the Railroad Administration took charge of it through the organization of a Safety Section, with H. W. Belnap as manager. The activities of the labor organizations formerly were largely directed toward efforts to secure safety appliance legislation and there have been many indications of an attitude of suspicion toward the safety first work carried on by the companies, which was largely directed toward the elimination of carelessness and unsafe practices. Now that the Railroad Administration has taken over the work, however, and the Safety Section is requiring the establishment of safety committees on all roads, the labor organizations on some roads are displaying a greater degree of co-operation in the campaign. For example, the general chairmen of the train service brotherhoods on both the Great Northern and Northern Pacific have recently issued circulars to their members calling their attention to the importance of the safety first work and urging them to take an active part in it by seeking opportunity to be placed on safety committees. We have also heard of a similar manifestation of interest on other roads which has been welcomed by the managements, some of which have appointed representatives of the organizations on their general committees. The circular also suggested that the discussion of safety be made a part of the routine business at lodge meetings of the various organizations. This is a spirit that should be encouraged and contains large possibilities for good results.

New Interest in Safety Work

The Interstate Commerce Commission recently issued a report by H. W. Belknap, chief of the bureau of safety, and James E. Howard, engineer-physicist, on a rail failure resulting in a passenger train accident on the Central of Georgia near Juniper, Ga., in October, 1917. The failure of the rail resulted from transverse fissures and Mr. Howard's deduction, following the reasoning of his earlier reports on similar failures, confirmed his previous conclusions, that while the initial cause is unknown, "service conditions undoubtedly cause the progressive development of the transverse fissures." The inference is that while the manufacture may or may not be at fault, the over-stressing and "cold rolling" of the rails in service are important contributory causes. In other words, the use of heavier rails would reduce the possibility of such failures. Commenting on these conclusions in the summary, Mr. Belknap states that "Remedial efforts have not been inaugurated and no adequate protection has been provided against the recurrence of this serious type of fracture. This is a disquieting condition that should be ameliorated." While in the past it has been incumbent on the railroads to profit by and act upon these reports, this duty now falls upon the Railroad Administration and it will be interesting to observe in what way, if any, these findings will affect the government orders for rails. To equip tracks generally with heavier rails implies their renewal at an increased rate, while the substitution of more rigid specifications for manufacture involves premiums on the prices to be paid for them. Activities of the Railroad Administration with respect to the rail program seem thus far to have been limited primarily to a determination of the minimum tonnage of new rail required, the possibility of the substitution of Bessemer for open hearth rails and, in the recent negotiations, the procurement of the lowest possible price on the rails to be purchased.

The Shoe Is Now on the Other Foot

The attendance of members, and the exhibit given by the railway equipment companies, at the convention of the Traveling Engineers' Association in Chicago in September ought to be the largest in the history of this association. Those who compose the association are men who are directly concerned with the operation of locomotives. They are a high-grade, intelligent, thoughtful, hard-working class of men; and their work, especially under present conditions, is of the greatest importance to the railways and to the country. The discussions at their conventions always have been highly earnest and instructive. Their meeting this year, and also the holding of an exhibit of railway devices and materials in connection with it, have been given the endorsement of Frank McManamy, the head of the locomotive department of the Railroad Administration, who, we believe, has acted very wisely in taking this action. It is probable that the attendance will be large, but the convention will not result in all the good it should unless the railway equipment and supply concerns make a large and representative exhibit of their products. An appeal to them to make such an exhibit has been sent out by C. W. Floyd Coffin, secretary of the Railway Equipment Manufacturers' Association and already a large number of reservations of space have been made. The number of reservations ought, however, to be greatly increased, and this should be done as early as possible. Mr. Coffin's address is 30 Church Street, New York. Every concern making any device or material in which the members of the Traveling Engineers' Association will be interested ought to get into communication with him at once and prepare to make an exhibit that will be of real value.

Should be a Big Convention and Exhibit

The government has now assumed operation of the telegraph and telephone lines as well as the railways. The first steps taken in the reorganization of the telegraph and telephone lines bear a striking contrast to what has been done by Mr. McAdoo in reorganizing the railroads. The operation of the telegraph and telephone lines has been turned over to Postmaster General Burleson. He has turned it over principally to a man named David J. Lewis. Who is Mr. Lewis? Well, he is a former coal miner, who studied law, practiced in Cumberland, Md., was elected to Congress, ran for the Senate and was beaten, and was opposed to the Tariff Commission. While in Congress he wrote a series of speeches and articles advocating government ownership of telegraphs, telephones, railroads and other public utilities. These articles and speeches disclosed the fact that he knew more things about the railways of the world that were not so than almost any other man living. If, as apparently is the case, he knows as

Politics in Telegraph and Telephone Service

little about the telephone and telegraph business as he does about the railroad business, he is an utter misfit in his new job. In other words, his appointment is a typical political one, and should be regarded as would be the appointment of Senator La Follette or Clifford Thorne as director-general of railroads. Mr. McAdoo, in reorganizing the railroads, has put experienced railroad men in the most important positions; and if he does not get good results it will be because it is impossible to make a success of government operation, even in time of war. When the railway officers, employes and security owners consider what the appointment of Mr. Lewis means they may well thank their stars that Mr. McAdoo and not Mr. Burleson is running the railroads. It cannot be too strongly emphasized, however, that under government operation of railways in time of peace, there almost certainly would be more politicians and theorists like Lewis than experienced and able railway men appointed to important railway positions. It is Mr. Burleson, and not Mr. McAdoo, who, in this matter is running true to the politician's usual form.

An Indefensible Contract Warranty

AN EXTRAORDINARY warranty provision, which is adapted to destroy many legitimate business concerns, is being inserted in the contracts the government is requiring to be signed by concerns from which it is buying railway equipment and supplies. The provision is as follows:

"The contractor expressly warrants that he has employed no third person to solicit or obtain this contract in his behalf, or to cause or procure the same to be obtained upon compensation in any contingent, in whole or in part, upon such procurement; and that he has not paid, or promised or agreed to pay, to any third person, in consideration of such procurement, or in compensation for services in connection therewith, any brokerage, commission or percentage upon the amount receivable by him hereunder; and that he has not, in estimating the contract price demanded by him, included any sum by reason of any such brokerage commission or percentage; and that all moneys payable to him hereunder are free from obligation to any person for services rendered, in the procurement of this contract. He further agrees that any breach of this warranty shall constitute adequate cause for annulment of this contract by the United States, and that the United States may retain to its own use from any sum due or to become due thereunder an amount equal to any brokerage, commission or percentage so paid, or agreed to be paid.

"And no person shall be received as a contractor who is not a manufacturer of or regular dealer in the articles which he offers to supply."

The intent and effect of this provision apparently are absolutely to prevent any individual or concern from selling materials to any railway under government control and receiving a commission as compensation for doing so. The last sentence permits a "regular dealer," as distinguished from a manufacturer to be "received as a contractor"; but what is a "regular dealer"? Apparently, the language implies one who actually buys articles and resells them. On this interpretation, one who sells goods strictly on commission is not a "regular dealer."

It is evident that this provision is being inserted in the contracts to stop some form or forms of abuse, instances of which have come to the notice of government officers. Certainly, if abuses which are occurring at the expense of the government have been discovered, effective measures should be adopted to stop them. Perhaps it has been learned that professional lobbyists in Washington have been using real or pretended political pull to get business from the government on commission. If so, this should be stopped. Possibly it has been found that some railway supply companies have been paying graft in the form of commissions to railway men to get them business. Unfortunately, such things have been done, and they may be being done now, although those familiar with the facts know that even before government control was adopted, grafting in the railway business had been reduced to very small proportions. If government officers suspect that there is grafting relations between supply companies and railway officers, they ought to leave no stone unturned to learn the facts and expose and punish the guilty.

If, however, the purpose of this provision is to stop lobbying or grafting, it is manifestly not adapted to accomplish its purpose. Lobbyists and grafters, by virtue of the very nature of their callings, are not controlled either by what is put into or by what is left out of written contracts. They always try to keep their transactions secret; they usually succeed in doing so; and the only effect of trying to circumvent them by such contract provisions as the foregoing is to make them more wary and secret in their operations.

While, however, this contract provision will not apparently abolish any abuse, it will have important effects on many business concerns. There are illegitimate commissions and legitimate commissions. A commission paid by a railway supply company to a railway officer to induce him to purchase goods for his railway from the supply company is a bribe. Suppose, however, that a manufacturer of some railway specialty in New York desires to sell his device to a railway on the Pacific Coast. His business on the Pacific Coast is not large enough to justify him in opening a separate office and employing a salaried agent in San Francisco. He, therefore, looks around and finds another railway supply manufacturer in New York who is similarly situated; and they together get a man, who is not in any way connected with the railway business, to open an office in San Francisco and sell the goods of both of them on a commission basis. Innumerable specific examples of business handled in this way could be cited.

Is there anything dishonest or otherwise culpable about this? Manifestly not; and yet it is prohibited by the contract provision which the Railroad Administration is making the railway equipment and supply companies sign. Manufacturers must either put all their representatives on salary or quit selling goods to railways at places where they have not salaried representatives. Why, it may be asked, should they not pay them salaries instead of commissions? Because the commissions of an agent representing more than one concern automatically adjust themselves to the relative values of the services rendered to the different concerns, while they could not so divide his salary between them as to make the part paid by each bear an exactly fair proportion to the service he rendered it.

How could advantage possibly result to the Railroad Administration if the agent in this case were put on a salary instead of a commission basis? In no way, unless his total salary were made less than his total commissions had been; and there is no good reason for anticipating that this would generally be the case. On the contrary, the experience of business men is that men working on commission usually place more orders in proportion to the amount of compensation paid them than men working on salaries.

One of the worst features of this contract provision is that it makes a direct and obvious discrimination in favor of large railway supply concerns at the expense of small concerns. The large concern can afford to maintain offices and salaried representatives in all parts of the country, while its smaller competitor, in order to secure equally widespread representation, must join with other concerns in maintaining joint offices and joint agents on a commission basis. Deprived of the right to pay commissions, many small concerns will be forced to abandon great parts of the field to their large competitors.

The contract provision quoted bears the appearance of having been suggested by some exceptionally exaggerated case of abuse and to have been drafted by somebody to stop that particular form of abuse without due regard to the effects it would have upon numerous concerns doing business in a perfectly legitimate way. It is so sweeping, so drastic, and so unfair, and is adapted to do such a trifling amount of good and such a great amount of harm, that we are confident Director General McAdoo will not long allow it to continue to be used.

Proposed Amalgamation of Railway Associations

THERE ARE IN THIS COUNTRY today about 40 important railway associations of a national character, each of which gives attention to investigating and studying some special phase or field of railway activity and in recommending constructive measures for improving railway practices. Each of these organizations has been called into existence and developed to fill a real need, some of them dating from shortly after the Civil War. That the different associations have been important—yes, vital—factors in bringing the roads to their present high state of development cannot be questioned. Undoubtedly, it was because of this that the director general of railroads suggested, shortly after the railroads were taken under federal control, that the several associations amalgamate so as to form one congress of associations to whom he could look for recommendations on various subjects as representing the findings of the best talent in the railway world. Such recommendations could then be made mandatory by the Railway Administration rather than merely recommended practice.

It is understood that the officers of the American Railway Association and seven other organizations have had several conferences to determine what steps should be taken to meet the wishes of the director general. What consideration is to be given to the 30 or more other associations, several of which can be classed almost with some of those which were represented in the conferences so far as importance in a large way is concerned, is not quite clear. Possibly this is because many of these organizations consider such highly specialized and intricate subjects that they are followed and appreciated by but few of the higher executive and operating officers. The Traveling Engineers' Association, the Air Brake Association and American Bridge and Building Association are typical organizations. This is exceedingly unfortunate, because final action which may put some of them out of existence and put a damper on their activities is in the hands of these higher executive officers.

The *Railway Age* and its associated publications have followed the work of practically all of these organizations closely for years—far more closely than the executive officers of the railways. This paper in the past frequently has made suggestions as to how the different organizations might cooperate in order to cut out duplication of effort and get better results; in one or two instances it has even suggested consolidation of organizations that in the course of development had become intimately associated. It never has and does not now view with favor any measure that will destroy the initiative or enthusiasm of any of these organizations. It does believe that most of them should be given official backing and encouragement; it emphatically believes that the work which they are doing should be co-ordinated, that their recommendations should pass upward through the proper channels and receive recognition on the part of the railroads as a whole and that specific assignments should be made by the American Railway Association or the Railroad Administration to the individual associations on subjects on which recommendations or advice are desired. These things, however, can all be done and with full and hearty co-operation on the part of all of the organizations without interfering to any extent with their form of organization or their individuality.

It must not be forgotten that these organizations have a two-fold object. In the first place through study, scientific investigation, and exchange of experiences they decide upon standards or recommended practices. This is important and is highly constructive. It is greatly to be regretted, however, that in the case of some of the minor organizations the findings do not receive more official recognition, but are confined largely to those roads which have representation in the membership and whose men attend and take part in the conventions. The railway press has helped to overcome this handicap by publishing accounts of more important findings of these associations.

The second object is, if possible, more important than the first, and yet it is in danger of being largely overlooked by the higher executive officers and the Railroad Administration. It is the educational and inspirational effect produced by the association meetings. Officers, foremen and others, including the younger men, have come to the meetings, sometimes downhearted and oppressed with their peculiar difficulties; they have gone away with bigger and broader views, with a renewed zest for the work. They have often obtained information—in the meetings or out of them, when chatting with men from other roads—that has enabled them to go back home and revolutionize practices on their own roads and save thousands of dollars. Cases of this kind can be cited by the hundreds by those who have followed the work of the different associations and attended their meetings. Can the railroads of this country afford to restrict or dampen activities of this nature?

Amalgamating, consolidating, even co-ordinating these associations, is a matter that cannot be handled mechanically or theoretically. It is too big for that; it requires an intimate knowledge of the aims and workings of each organization; more than that it requires an appreciation of human nature that threatens to be lost sight of in railway operation today and that never was appreciated as it should be. What is Schwab doing today in the ship building industry? Is he trying to standardize practices in ship construction? Is he attempting to unify operation and stifle individual initiative? Not for a minute! He is trying—and is succeeding—in getting the men in that industry (and by men we mean everyone from the helper and apprentice up to the chief executive of each plant) to feel that they are important factors in a big game—and a real game. He is trying to make that game just as real as a Yale-Harvard football game or a World's Series. What the railroads need today is more of this spirit and it will be greatly helped by recognizing all of the voluntary associations which have been working to perfect the railroad industry. The keen interest that the men have in their associations is indicated by the fact that, in many cases, the members have paid their own dues and expenses when attending the meetings.

It is hinted that the expenses of carrying on the different associations can be reduced by amalgamating them. Possibly, but will it pay? Would it not be far better to increase the expenses by sending more of the men to the meetings, and by seeing that their expenses are paid while on such assignments? There seems to be an impression that some of these meetings are in the nature of big "joy rides" or excursions. To any officer in that state of mind, we recommend disguising himself and attending the first meeting that opportunity offers—the Travelling Engineers' meeting at Chicago next September, for instance. He will have the surprise of his life. Inspiration and enthusiasm cannot be bought over the counter; they must be cultivated and they surely need lots of cultivation on the railroads in these trying times. The tendency today is away from rather than toward what Schwab is doing so well among the ship builders.

There is another danger that must be guarded against. Many railway associations have enrolled among their members and have actively working on their committees experts from colleges, universities or railway supply companies. Some of the most valuable contributions in the way of reports and individual papers come from these men. If individual memberships are abolished and the associations are made up only of representative members from the various railroads, what will become of the invaluable services that these men are in a position to render? Surely it cannot be the intention to push them thoughtlessly aside!

The *Railway Age* believes in making the best use of everyone of the railway organizations. It believes in coordinating their activities in order to prevent duplication of work and effort, but in such a way as to preserve the individuality of each organization and to encourage it to greater efforts. It believes that the American Railway Association or the Railroad Administration should be in a position to command the energies and resources of these organizations to investigate certain problems and report upon them; conversely the American Railway Association or Railroad Administration should stand back of and encourage these associations, thus inspiring them to do a bigger and better work. The *Railway Age* believes that these associations, most of which have been developed by voluntary effort and have been partly or wholly financed by individuals, should be encouraged to play their part as in a big game, thus strengthening and upbuilding them. The human factor is the really big factor for consideration whether in increasing railway operating results or in winning the war, and too much emphasis cannot be placed in keeping it ever in the foreground.

Increased Supervision for Maintenance of Way

MAINTENANCE OF WAY and maintenance of equipment bear a vital, inter-related influence on the conduct of railway transportation. Neither can be neglected without serious results. A scrupulous attention to one will not compensate for a neglect of the other. It is, therefore, inconsistent, that in the organization of the central administration for the government operation of the railroads, there is no officer or committee charged with responsibility for maintenance of way work, although a special body has been provided to look after the maintenance of equipment.

The importance of the proper upkeep of railway tracks and structures is generally recognized. Maintenance of way accounts for nearly one-fifth of all operating expenditures, and on most roads a staff of special officers has the work in charge. The serious obstacles which attend the proper conduct of this work under existing conditions, and the prospect of a seriously deteriorated condition of the tracks with the advent of winter, have been dwelt upon previously in these columns. Reports from various parts of the country indicate that the present progress of the work holds little hope for a completion of the schedules outlined. It is true that expenditures for the first five months of this year are much larger than for the corresponding period of 1917—twenty-three per cent larger in fact—but in view of the greater cost of both labor and material, there is no practicable way of ascertaining what the relative performance has been, in units of work completed. However, it is definitely known that rail and tie renewals are positively in arrears.

The problems of the maintenance of way officers have become increasingly difficult with the progress of the war, particularly since our own participation therein. The degree of success attending the work on various roads has been dependent largely on the degree of beforehandedness exercised in the competition for materials and labor. Consequently the roads in best condition today are those which have made the greatest efforts in the past to secure efficient labor and adequate supplies of rails and ties either in stock or under order. It is these roads that are making the best progress with this season's work, for the control which the Railway Administration now exercises over the purchase of rails and ties, necessary as it may be in the face of a shortage, has tended to retard rather than accelerate the accumulation of an adequate supply.

It is clear, therefore, that conditions will be much more serious as these stocks of track materials now held by the railroads are diminished—as we approach the condition now existing in Canada. With the roads becoming more and more dependent upon the centralized agencies for the supply of both materials and labor there will be an increased need for an authority, centralized to the same degree as the purchases, that is competent to distribute supplies in proportion to the needs of the several railroads and is also in a position to make representations to those in control of expenditures so that maintenance of way work as a whole will be allotted an adequate share of the disbursements for operation. Such central or regional maintenance officers or committees need not be concerned with the maintenance standards or methods of doing work on the various roads; their prime duty would be rather to see that maintenance of way is not neglected in the face of other pressing demands on the time and energies of the central and regional officers.

Southern Pacific

FOR MANY YEARS in commenting on the annual reports of the Southern Pacific the *Railway Age* has pointed out that earnings have been plowed back into the property to an unusual extent. It was pointed out that the Southern Pacific, like the Great Northern, had never gone through a receivership and consequently had never been starved in an attempt to avert bankruptcy. At times it may have seemed to officers of other railroad companies that this reiteration was liable to exaggerate the importance of the fact, but if justification were needed for this reiteration it is amply supplied in the annual report of the company for the calendar year 1917. This annual report was given out to the public on the afternoon of Monday of this week. It is in some ways one of the most remarkable statements that any large American railroad company has made.

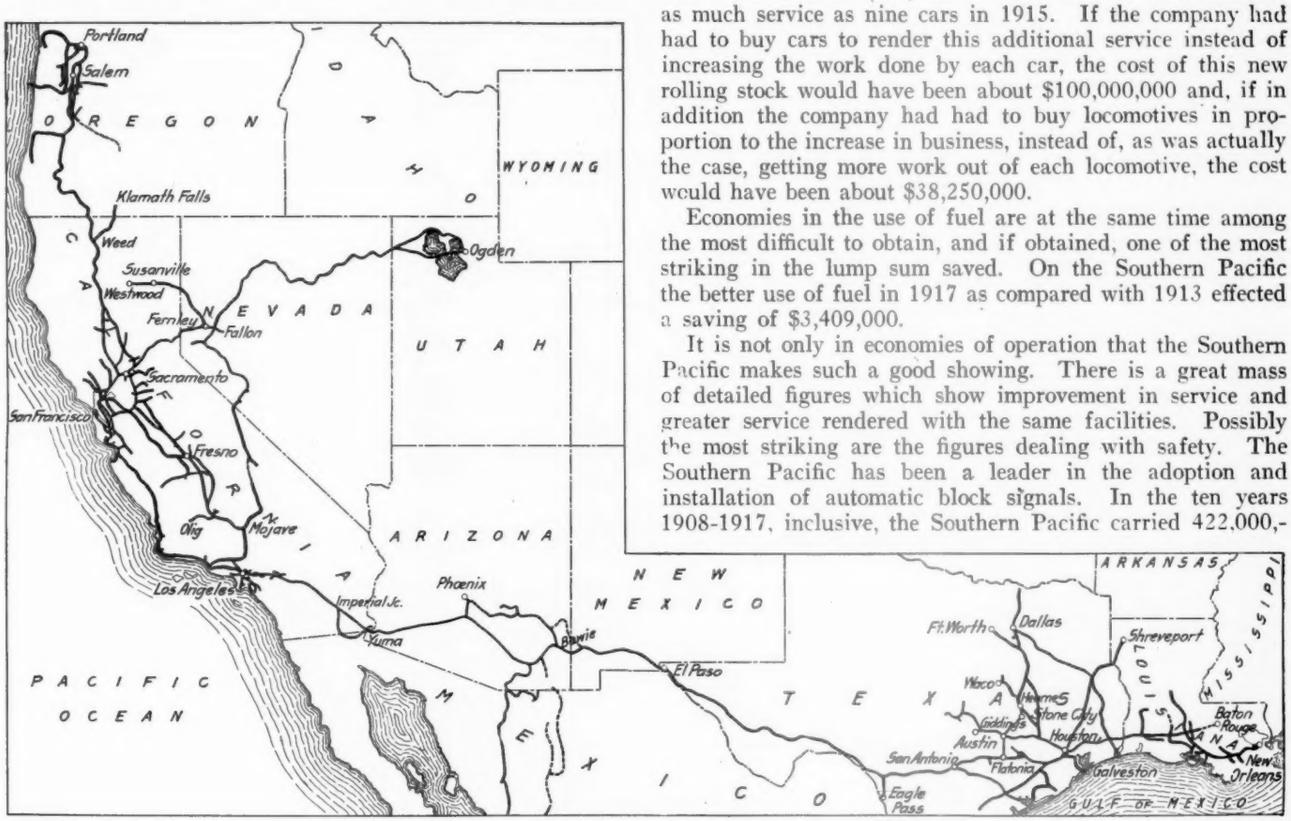
As Julius Kruttschnitt, who has been the guiding genius of the operation of the Southern Pacific under one title or another since about 1895, says: "The assumption of control and operation of the railroads of the United States by the government on December 28, 1917, marked an epoch in their history." Mr. Kruttschnitt also says: "The year 1917 closed with the *esprit de corps* and discipline of working organization, the physical condition of the property and the safety and other results of operation at a higher standard than ever before had been attained." The word higher standard quite inadequately expresses the extent of the achievement of the Southern Pacific organization in 1917.

Whether we express it in dollars and cents, or in units of service rendered, or in statistics of operation, the results obtained in 1917 are amazingly good. The company earned $193,971,000, or about $30,500,000 more than in 1916, while operating expenses amounted to $120,602,000, or only about $17,513,000 more than in 1916. There was an increase of $14,960,000 in the price per unit paid for fuel, labor and materials, so that the actual increase in cost of handling nearly 25 per cent more freight and a little over 25 per cent more passenger business, excluding the increase in cost per unit of labor and materials, was about $2,500,000. After paying expenses, interest charges, etc., there was $49,129,000 available for dividends in 1917 as compared with $35,423,000 in 1916. The regular six per cent dividends were paid, of course, in both years, but the amount earned was equivalent in 1917 to 17.65 per cent, and in 1916 to 12.63 per cent.

A most striking comparison is made in the 1917 report between the operations of that year and the first year of the Southern Pacific's corporate existence—1886. Freight revenue had increased in this period from $18,668,000 to $132,608,000, or about 610 per cent, while the average receipts for carrying a ton of freight one mile had decreased

from 1.297 cents to 0.923 cents, or nearly 29 per cent. Gross income, after paying expenses and taxes and after the receipt of interest, dividends, etc., on investments, amounted to $74,837,000 in 1917, as against $13,224,000 in 1886, an increase of 466 per cent. It might be mentioned that the mileage of road operated in 1886 was 4,846 and in 1917 11,137 miles, an increase of about 130 per cent. The interest on the funded debt of the company in 1917 was $24,219,000, comparing with $8,755,000 in 1886, an increase of 177 per cent. Only if there were some adequate way of bringing before the reader a comprehensive picture of the additions and betterments which have been made to the Southern Pacific since 1886, would it be possible to give the statement its proper importance, that interest on funded debt had increased only one and three-fourths times, while additional mileage alone had increased one and a third times.

At the end of 1917 the total assets of the Southern Pacific amounted to $1,685,000,000. This is $303,000,000 greater



The Southern Pacific

than all the debts, including the total outstanding stock of the Southern Pacific. After allowing $52,000,000 for accrued depreciation, there is an invested surplus equal to 92 cents on each dollar of par value of outstanding stock. In addition and not included as an asset, there are nearly 11,000,000 acres of unsold land belonging to the subsidiaries of the Southern Pacific.

To the general public, these figures of earnings and expenses, assets and debts, are more easily understood than are the statistics of operation and the growth in the number of units of service, and for this reason the figures for earnings and for growth in assets may be used in a demagogic attack on capitalists in general and the railroads in particular. To one who understands them, however, the operating statistics are even more remarkable than the financial statement and are irrefutable evidence of the fact that in recent years the financial strength of the Southern Pacific has been based on the wise development of the property in earlier years and the magnificent organization which has been built up and developed with ever increasing success. The ton-mileage of revenue freight carried in 1917 amounted to 13,419,000,000, an increase of 24.49 per cent over 1916, and of 78.58 per cent over 1915. The freight train mileage, on the other hand, amounted to 22,884,000, an increase over 1916 of only 14.32 per cent and over 1915 of about 53 per cent. The average tonnage of freight per train was 603 tons in 1917, an increase of 8.92 per cent over 1916 and of 25.08 per cent over 1915. In 1917 four trains moved as much tonnage as five trains moved in 1915.

The average carload in 1917 was 25.34 tons, an increase of 7.24 per cent over 1916 and of 17.30 per cent over 1915. The average mileage made by each freight car was 43.30 in 1916, an increase of 10.60 per cent over 1916 and of 43.61 per cent over 1915. The ton-mileage of revenue freight moved, per freight car on the line, increased nearly 80 per cent in 1917 over 1915, so that five cars in 1917 rendered as much service as nine cars in 1915. If the company had had to buy cars to render this additional service instead of increasing the work done by each car, the cost of this new rolling stock would have been about $100,000,000 and, if in addition the company had had to buy locomotives in proportion to the increase in business, instead of, as was actually the case, getting more work out of each locomotive, the cost would have been about $38,250,000.

Economies in the use of fuel are at the same time among the most difficult to obtain, and if obtained, one of the most striking in the lump sum saved. On the Southern Pacific the better use of fuel in 1917 as compared with 1913 effected a saving of $3,409,000.

It is not only in economies of operation that the Southern Pacific makes such a good showing. There is a great mass of detailed figures which show improvement in service and greater service rendered with the same facilities. Possibly the most striking are the figures dealing with safety. The Southern Pacific has been a leader in the adoption and installation of automatic block signals. In the ten years 1908-1917, inclusive, the Southern Pacific carried 422,000,000 passengers and had but one death of a passenger in a train accident.

The Southern Pacific has made special efforts to reduce the number of rail failures and thus reduce the number of derailments and other accidents due to this cause. The number of rail failures per hundred miles of track, equated as to traffic carried, has been reduced 35 per cent in the last eight years and is only one-fourth as great as the rail failures per hundred miles of track, equated for traffic, for the United States and Canada.

Most of the increase in operating expenses was in transportation expenses (the out-of-pocket cost of moving the business). Maintenance of way cost $17,522,000, a decrease of $527,000 as compared with the previous year, and maintenance of equipment cost $24,262,000, an increase of $682,000. Transportation expenses were $68,778,000, an increase of $16,390,000 over the previous year. Notwithstanding the smaller amount spent for maintenance of way,

Mr. Kruttschnitt says that the annual maintenance of way inspection made late in 1917 showed about as high a rating as in 1916. It is interesting to note that only 4.6 per cent of the freight cars in service at the end of 1917 were in bad order. Even under ordinary circumstances this would be a low percentage, and under present conditions it is extraordinarily low. During the year the company placed orders with outside equipment companies for 57 locomotives, 41 passenger train cars and 718 freight train cars. These are for delivery in 1918, and in addition, the company is building at its own shops 56 locomotives and 3,808 freight train cars. The cost of this equipment will be about $16,650,000.

Notwithstanding the high cost of materials, the Southern Pacific has gone ahead on its program of additions and betterments, and in 1917 spent a net amount on road and equipment, chargeable to capital account, of $30,198,000. At the end of the year the company had on hand $11,733,000 cash and $20,000,000 on deposit. There were no loans and bills payable. One of the most important pieces of new work which the Southern Pacific is doing is the building of the San Diego & Arizona, a line which is to run from San Diego, Cal., to El Centro in the Imperial valley, Arizona. Only about 12 miles of this road remained to be completed in May and when the line is completed the distance from the Imperial valley to San Diego by rail will be reduced from the present 339 miles, via Los Angeles, to 147 miles.

The Southern Pacific owns the Southern Pacific Railroad of Mexico with its 1,241 miles of line in the Republic of Mexico. In 1917 partial operation was undertaken of this Mexican property; the average mileage operated was about 1,000 miles. It is estimated that the cost of the property of the Southern Pacific of Mexico destroyed since the beginning of the Madero revolution in 1910 was about $2,462,000.

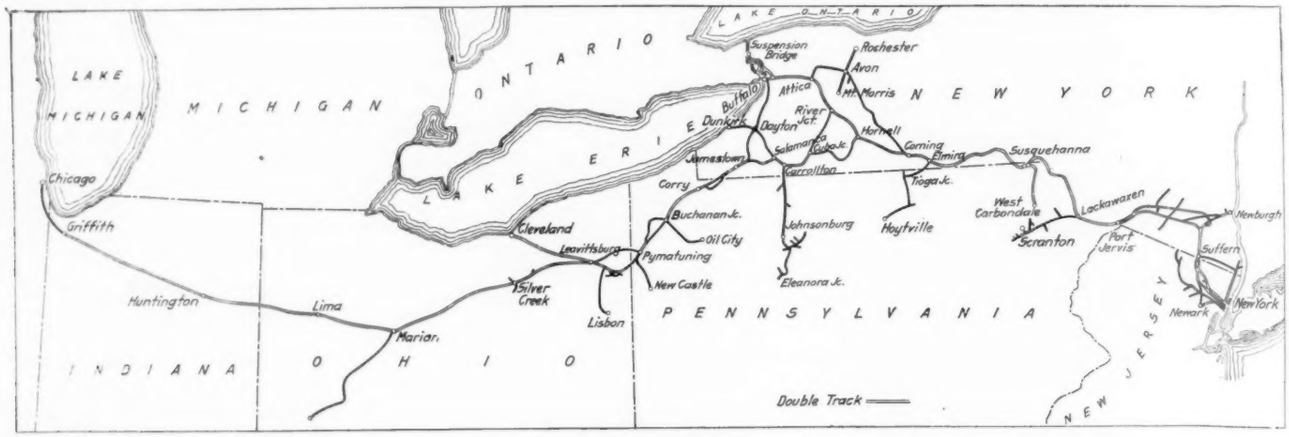
The Southern Pacific figures that if the United States government takes over all of the mileage which the company has been operating the rental which the government would pay will approximate $48,000,000. The dividend requirements of the company to continue its regular six per cent dividends amount to $16,369,000 and in 1917 the non-operating income alone was only $6,000,000 less than interest charges, so that it would appear as if the company will have an ample and safe margin over and above its fixed charges and dividend requirements from the government rental.

The following table shows the principal figures for operation in 1917, as compared with 1916:

	1917	1916
Mileage operated	11,164	11,096
Freight revenue	$132,608,207	$112,460,567
Passenger revenue	45,380,193	37,112,447
Total operating revenues	193,971,490	163,427,423
Maintenance of way and structures	17,522,352	18,049,585
Maintenance of equipment	24,261,507	23,579,907
Traffic	3,131,417	3,105,899
Transportation expenses	68,778,430	52,388,289
General expenses	4,584,982	4,146,810
Total operating expenses	120,601,823	103,088,737
Taxes	13,792,176	8,269,292
Operating income	65,078,811	52,008,200
Gross income	75,856,844	63,644,316
Net income	49,129,417	35,422,514
Sinking funds, etc.	978,097	957,186
Dividends	16,369,400	16,360,632
Surplus	31,781,920	18,104,696

Erie

THE COST OF RUNNING a train a hundred miles on the Erie increased in 1917 to a rather astonishing extent. The total mileage of all trains run on the Erie in 1917 was 23,048,000, which was 5.71 per cent less than the mileage run by trains in 1916. This of itself is a very creditable showing, because the ton mileage moved was 7.36 per cent greater in 1917 than in 1916 and the number of passengers carried one mile was 3.17 per cent greater, but the cost of fuel for train locomotives alone (excluding switching locomotives was $8,534,000, or $3,612,000 more than in 1916, an increase of 73 per cent. Total transportation expenses, including fuel, increased over 31 per cent. Beside the increase in cost of materials there were increases in rates of pay all along the line and, in some departments at least, it is probable that labor was considerably less efficient in 1917 even than in 1916. There was an average of 44,796 employees in service in 1917 as against 38,332 in 1916, an increase of 17 per cent. With a decrease in train mileage it ought to have been possible to hold down the number of employees in train service, but, on the other hand, the Erie spent more for additions and betterments and for maintenance work, so that possibly in these departments the number of employees would have had to be increased to some extent even if the standard of efficiency had remained the same.



The Erie Railroad

The Erie has been having a hard time of it the last two or three years and the explanation is neither simple nor obvious. Before the great rush of business came, especially to the trunk lines and New England lines in 1915, the Erie had gotten its railroad into much the best physical shape that it had ever been in. Through saving every penny that was possible the company had been enabled to pay for a part of the very necessary additions and betterments through surplus income, and because of this and because of the good showing which the operating and traffic departments were making, the company was able to sell securities to pay for the remainder of these improvements. The road had become a fairly low grade, double track trunk line from New York to Chicago, with what appeared to be ample capacity to handle a much larger volume of business than was being handled on all divisions with the exception of the one on which the Pittsburgh district is located. There is no getting

away from the fact, however, that when business poured in in 1915, the Erie became pretty badly congested and operating costs ran up abnormally. A possible explanation, probably not by any means comprehensive, but at least tenable, is that during the long years of enforced bitterly drastic economies, the operating organization had been kept so weeded out as to have a very small margin of possible overload and that it may have been found almost impossibly difficult to expand this organization in 1915 and 1916, with the result that adequate supervision could not be maintained, and congestion followed. Of course, the Erie had the same difficulties as its competitors in disposing of freight at New York consigned to ocean carriers and any number of other difficulties to contend with peculiar to the last two years of railroading in trunk line territory; but on the other hand, at the beginning of the period of congestion it would have appeared that the physical capacity of the property was more nearly commensurate with the overload which was placed on it than was the physical capacity of other trunk lines.

In 1917 the Erie earned $79,776,000, an increase of $5,465,000. The average ton-mile rate and passenger mile rate were the same in 1916 and 1917, namely, 5.84 mills per ton per mile and 1.607 cents per passenger per mile, so that the increase in revenue measures the increase in business, although this increase in business in freight was an increase in average length of haul of each ton and not in the number of tons handled, the number of tons handled actually decreasing 1.45 per cent and totaling in 1917 43,717,000. The volume of merchandise freight and the tonnage of bituminous coal and coke considerably decreased, while the tonnage of anthracite coal carried was 21.61 per cent more in 1917 than in 1916.

Total operating expenses amounted to $67,477,000 in 1917, an increase of $14,023,000. This increase was largely accounted for by an increase of $1,127,000 in maintenance of way expenses, the total in 1917 being $7,496,000; in maintenance of equipment $3,747,000, the total being $18,757,000 in 1917, and $8,955,000 in transportation expenses, the total in 1917 being $37,571,000. It may be noted that the increase in transportation expenses is only about the same percentage as that shown by the Southern Pacific and yet, the Southern Pacific by every standard of measurement made a magnificent showing in 1917, while the fact of the matter is that the Erie was on the verge of bankruptcy when the government assumed control of operation and undertook the guarantee of rental. The explanation is obvious, but would involve more space than can be devoted to it here to be comprehensive. Suffice it to say that the operating ratio of the Erie in 1917 was 84.58 and of the Southern Pacific only a little over 62 per cent.

After paying operating expenses, taxes and interest charges, the Erie had $1,848,000 left and of this a little over $1,000,000 was required for sinking and other reserve funds, leaving about $800,000, of which $307,000 was appropriated for additions and betterments and the remaining $540,000 credited to profit and loss. In addition to the amount charged to income for additions and betterments, the Erie charged $4,676,000 to capital account for additions and betterments to road and $11,415,000 for additions and betterments to equipment.

In April, the Erie had $9,280,000 collateral notes maturing and refunded this, and raised additional working capital, through the issue of $15,000,000 new notes, secured by the collateral under the old notes and a considerable amount of additional collateral. The company also sold $5,000,000 prior lien bonds, $3,000,000 general lien bonds and $40,642,000 convertible bonds.

At the end of the year the Erie had $5,953,000 cash on hand as compared with $6,305,000 at the beginning of the year and had loans and bills payable in addition to the $15,000,000 notes mentioned above of $7,942,000, as compared with $1,219,000 loans and bills payable at the beginning of the year.

It is not surprising that the Erie directors should have expressed themselves in a thoroughly whole-hearted way as being in "full accord with the policy of government control for the term of the contract and for such other term as conditions demand." The Erie is one, and there are many others, of the roads that were in such shape financially as to make some form of government guarantee necessary, if the best interests of the whole country and especially the full utilization of the transportation facilities where they were most needed were to be obtained.

The following table shows the principal figures for operation in 1917, as compared with 1916:

	1917	1916
Mileage operated	2,259	2,257
Merchandise freight revenue	$40,022,205	$39,178,235
Coal freight revenue	21,238,964	17,926,667
Passenger revenue	10,417,358	10,100,378
Total operating revenues	79,776,368	74,311,262
Maintenance of way and structures	7,496,304	6,369,301
Maintenance of equipment	18,757,335	15,009,919
Traffic	1,392,008	1,350,216
Transportation	37,570,428	28,615,887
General expenses	1,808,202	1,705,082
Total operating expenses	67,477,124	53,453,701
Taxes	2,686,847	2,220,333
Operating income	9,593,417	18,628,600
Gross income	18,280,653	22,382,830
Net income	1,847,998	6,027,664
Sinking funds	1,001,032	881,920
Additions and betterments from income	306,856	513,833
Surplus	540,110	4,631,912

New Books

Proceedings of the American Wood Preserving Association. 262 pages, illustrated, 5 in. by 9 in. Bound in cloth and paper. Published by the American Wood Preservers' Association, F. J. Augur, secretary-treasurer, Mt. Royal Station, Baltimore, Md. Price in cloth binding, $3.50, paper, $2.50.

This volume contains the proceedings, of the fourteenth annual meeting, held at Chicago, on January 22-24, 1918. Among the papers of special interest to railway men are those on labor conditions; conditions in the tie market and present sources of supplies; the relation between the average life of ties and the percentage of renewals; and the effects of the War on timber of various sizes and committee reports on the purchase and preservation of treatable timber, and fire protection as applied to wood preserving plants.

Government Iron and Steel Prices. 6 in. by 8 in., 78 pages, bound in paper. Published by the Penton Publishing Company, Cleveland, Ohio. Price, $1.

On September 24, 1917, President Wilson approved the first schedules of fixed prices for iron and steel products. Since that time several other new schedules have been issued and old ones revised, so that there is now an extensive system of fixed prices covering raw materials and finished and semi-finished products in this industry. Owing to the wide limits covered by the schedule of prices established, there has been a definite call for a clear and complete compilation of these prices in a workable form. This need is filled fully by the publication above described. Not only are all these schedules of prices given in full, but additional information is presented concerning the history of the subject, the organization of the War Industries Board and the Iron and Steel Institute in the conduct of this work and a record of the announcements of the President and the Iron and Steel Institute in putting the established prices into effect. The price schedules cover 62 pages and are presented in a form that makes them really usable.

Letters to the Editor

Clifford Thorne Misquoted

CHICAGO.

TO THE EDITOR:

In your comment relative to the operating expense accounts of the carriers in your issue of July 5, 1918, I notice a statement that I presented an opposing argument "contending that the accounts should be recast to reduce the net operating income by amounts which should have been charged to maintenance." It is of no special importance, but I desire correction, if it meets with your approval. I have at no time contended that the operating accounts of the carriers should be recast as suggested. My sole position has been that the accounts should be compiled in accordance with the rules of the Interstate Commerce Commission. I further advocated correction in their accounting reports wherever substantial errors are found to have been made.

C. THORNE.

Importance of Personnel in Freight Train Operation

ST. LOUIS, MO.

TO THE EDITOR:

The subject of increasing the freight train load, which has been discussed in your columns from time to time by numerous operating officers, has not by any means been exhausted. Increasing the train load bears the most intimate relation to the net revenues. Every move, from that of the location and building, to the operation of the line, is, or should be, made with the end in view of hauling the maximum trainload.

On account of the diverging interests, all the way down from the staff of the executive to the man in the ranks, the maximum loading of trains meets with less co-operation and even more general opposition than any other one economy in railroad operation, and on this account constitutes a very large leak in the revenues. To attain the maximum ton miles there must be an executive who fully appreciates this truth. The spurs that create an impelling motive for local officers must come from the top. The superintendent has a difficult task in fusing the various interests under his jurisdiction on this proposition, and particularly so in securing the necessary co-operation on the part of the train and engine men on account of their method of compensation, the basis of which is the train mile, which is opposed to the end here sought, the maximum ton mile.

Why not change the method of compensation of these men from a mileage to an hourly or tonnage basis; or, in view of the seeming difficulties attending such a change, try the application of the bonus system to their compensation. For instance, after deciding on the rating of the engines on the several districts, pay a bonus of a stipulated amount for the gross ton miles per trip in excess of the stated rating, or a bonus of so much per hundred gross ton miles in the aggregate for the month, in relation, of course, to the power used, the matter to be worked out on a basis that will make for union in purpose between these men and the company.

As the matter now stands, the train and engine men being paid by the mile, most naturally any policy that tends to reduce miles per hour or day as the loading of trains does, will not elicit their hearty co-operation; in fact, it does meet with their opposition.

Self interest can usually be made to justify an attitude not in the best interest of the common good; the train and engine men can easily convince themselves that the slower movement due to heavier loading decreases the car supply to an extent that more than offsets the saving otherwise, and they can easily convince a large per cent of the shippers, who are not only interested in the quick movement of their freight, but who may also probably be waiting for cars to load, that this premise is correct. The shippers are at once, therefore, a large factor in the opposition, and unless the local officers, the men who finally have to answer for the overtime, engine failures, etc., have the unlimited support of the management in the attempt to reach the maximum of efficiency in train loading they will fail to do so.

Where the train loading is left to the local officers to any great extent it is safe to assume that the engines are not loaded to their maximum economical capacity. The superintendent's advancement depends in a large degree on his general popularity, and not least on how he gets along with his men, and unless his convictions are the strongest, he will most likely take the line of easy resistance on the tonnage proposition, where, as he sees it, the risk in brooking such a solid opposition means not only considerable added work and annoyance, but probably failure in attaining his purpose.

Is it not just possible that general officers, like the superintendent, easily justify letting well enough alone? They reason that the engines are pulling more than ever before, and are getting over the road in good shape, and in this they are likely to be backed up by the mechanical officers, who express a fear that to increase the load will pull the engines to pieces. The mechanical man is not so vitally interested in the tonnage showing; on the other hand, his very position depends on the performance of his engines.

The trainmaster's and train despatcher's success depends largely on getting the trains over the road. They are pulling as much tonnage as they did last month or last year, and those figures are the only check, and as the report this month shows up as well, or possibly a little better, than last month or the same month last year, all hands congratulate themselves and each other on the accomplishment, and "let well enough alone."

An engine is not loaded to its capacity unless it is given all it can pull over the ruling grade; provided, at the same time, an average of ten miles an hour (including all delays) can be made over the district. When an engine is so loaded there are points where, if a stop is made, the train can not always be started, necessitating a double; and sometimes when such a stop is made other trains are delayed, and there are many pretexts under which such a stop can be made where it is next to impossible to ascertain positively the true facts. The train men and engine men have the matter largely in their own hands, and unless they know that full loading is considered as of first importance by the management, the local officers are pretty sure to fail. The local officer himself knows this so well that he will not be at all anxious to get under the lash of the "cat-o-nine-tails" of criticism and possible discredit.

On a single track road, if the freight trains make little or no overtime, it is safe to assume that the engines are not hauling the maximum economical load, because delays aggregating three to five hours frequently occur, and when that much time is run off the engine is not properly loaded. An examination of the train sheets on such a division will disclose the fact that many of the trains make their hundred miles in five to seven hours; and this further indicates a loss in ton miles.

While it is desirable to get trains over the road in the quickest practicable time, it is equally important to make available the whole of the tractive effort at command, and to get full value for the services of the crew paid for. If a trip is made in six hours, payment is made for two hours

not actually earned, and care should be taken not to hammer trainmasters and chief despatchers too hard on overtime or it will likely be a case of "save at the spigot and waste at the bung," in a reduction in tonnage per train.

The train and engine men do not want the overtime when they can increase miles per hour. It is the miles they want, with the highest speed per hour, since they are paid by the mile. Watch, therefore, the hours paid for that are not worked. Few roads keep an account of this unearned time, which increases as overtime decreases, and vice-versa.

Securing the maximum economical ton mile depends also on keeping the power in first class condition. Failure to do this leaves the tonnage rating of the different engines to the discretion of the local officers. One engine is loaded a few tons lighter than another on account of her condition, and then the conductors and engineers, on the least provocation, insist on cutting the rating of other engines. In short, when the power is not maintained in uniform and first class shape the tendency is, on account of lack of uniformity and system, and lack of means of a check, gradually and constantly to decrease the train load. Increasing the train load, and even maintaining it, requires constant systematic pulling against a very, very strong current of adverse influences.

An efficient fuel agent, who reports to the ranking operating executive, is an indispensable element in the campaign to increase the train load. He is vitally interested in the condition of the engines and sees to it that the proper authority is called upon to correct steam leaks and other defects which cause a waste of fuel and loss in tractive effort. His traveling representatives are continually riding the engine that is not up to standard in performance. These men, with the fuel agent, are thorns in the side of the roundhouse foreman, master mechanic and superintendent until defects in power are remedied.

Tightening up the schedules of fast freight trains and increasing the number of such trains, as well as passenger trains, bears a direct relation to the ton mile. Live stock, which always calls for reduced tonnage rating, must be confined to certain trains or as few trains as possible.

Finally, the superintendent must have conferences with all of the subordinates hereinbefore mentioned, singly and in groupes, with sufficient frequency to keep all of the channels of communication constantly open. Troubles and losses charged to neglect or inefficiency ought many times to be charged to the laziness of the superintendent, in not getting his men together and making them give better and more detailed accounts of their stewardship. M. G. S.

Automatic Train Control

PITTSFIELD, MASS.

TO THE EDITOR:

It is not surprising that the recent disastrous collisions at Ivanhoe on the Michigan Central, and at Harding on the Nashville, Chattanooga & St. Louis, should provoke a lively discussion as to their causes and as to the means to be adopted for the prevention in the future of accidents of the same character.

If past experience counts for anything, it is certain that the human element in train operation *cannot* be depended upon in every condition of service to secure safety for life and property, and it would be of little use here to inquire into the reasons why the engineman fails to heed the indications of the signals, why he forgets to act in accordance with his orders, or why he falls asleep at his post. At this late day all such inquiries may well be handed over to the pschyologist for his amusement and entertainment, because his answers to these questions, when he gets them, whatever they may be, cannot alter one iota the character of the action which every reasonable and conscientious person knows must be taken sometime or other—and which ought to be taken now—to prevent the repetition of these horrible fatalities, and the destruction of property.

It is practically agreed by all vitally concerned in these matters that a reliable, trustworthy, and unobtrusive automatic train control system, properly installed, would be the suitable means to adopt for prevention of similar catastrophies, and since such a system of control is now available there should be no further delay in commencing the installation of it somewhere at least, in actual train service. To put the matter off longer with the plea that no satisfactory device for reliable and safe train control is to be had would be utterly inexcusable, I might say criminal.

It seems to be the invariable fate of every new device which makes for greater improvement that is offered for trial or adoption, to meet with strong and unreasonable opposition, especially if such device bids fair to prove a marked innovation that is likely to unsettle long established practices; hence it would appear that the automatic train control device, like practically all other good devices that have fought their way to the front in the past and that are now considered indispensable because of the excellent service they are rendering in their particular field under present far more exacting conditions than obtained at the time of their introduction, is passing through an ordeal similar to that which they had to encounter before the recognition was accorded them which their merits entitled them to.

Automatic train control is surely coming for the reason that it offers reliable assurance of freedom from fatal and disastrous collisions and for the further reason that it will make possible substantial improvement over present methods of operating trains; this in turn will make for real economies in the business of transportation.

It is quite a mistake to suppose that the automatic train control is going to add, as a permanent thing, burdensome expense to the present cost of maintaining the signal system, and all prophecies with respect to this aspect of the matter might, I believe, better be withheld until some experience has been acquired from its actual performance in road service for a reasonable period of time.

Perhaps one of the things that has helped more than any other to retard the adoption of automatic train control is the widely entertained idea that an absolutely perfect device should be produced in the laboratory before any steps towards actual installation upon the road should be undertaken. Could there be anything more illogical than this idea?

If we take the troube to examine the reports made by the I. C. C. Bureau of Safety, covering the fatal accidents which it has investigated during the past five years it will be seen that nearly every one of them might have been prevented by the operation of the simple elementary parts of the control device. This fact is well worth serious consideration; and the best answer that I can think of to your question "What Lessons Do Collisions Teach?" is, Install upon our railroads without unnecessary delay an efficient system of automatic train control. JOHN P. KELLY.

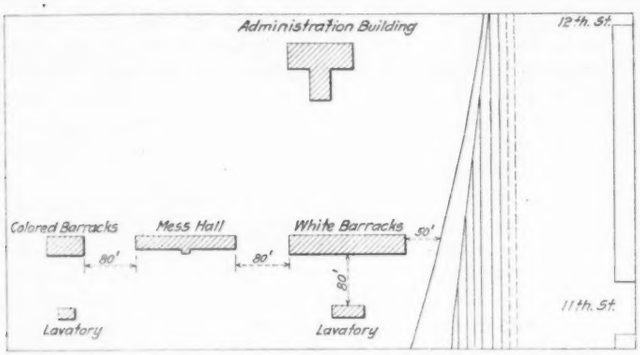
GERMAN ELECTRIC RAILWAY PROJECT.—An extensive network of electric railways is planned for the industrial district of Merseburg, Germany, where recently very important industries have been established, including a large factory for ammonia for use in making artificial nitrates. The length of the railway lines is to be 68 kilometers (42 miles) and the cost of construction is estimated at 10,000,000 marks ($2,400,000). The new company will be established with a capital of 2,500,000 marks ($600,000) of which the Allgemeine Elektricitäts Gesellschaft subscribes 1,000,000 marks ($240,000) leaving it principally to the municipalities interested to raise the remainder.—*Commerce Reports.*

General View of Railroad Y. M. C. A. Buildings at Sheffield, Ala.

Remarkable Record Made by Southern at Sheffield

Population Trebles in Ten Months; Special Provision for Welfare of Largely Increased Forces

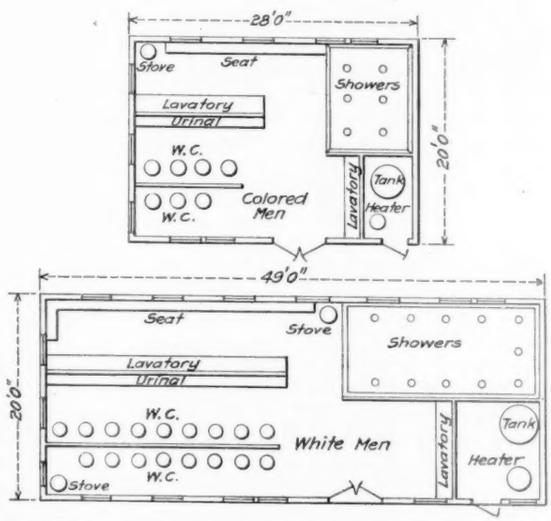
THE RECENT LOCATION of twelve government nitrate plants at Sheffield, Ala., caused that city and the surrounding district practically to treble in population within a few months. Sheffield is a division point on the Southern Railway and had a population of about 4,900; Tuscumbia, a town which formerly had a population of about 3,400, is about two miles from Sheffield on the main line of the Southern; while Florence, the county seat, with 6,700 people, is located a little more than two miles from Sheffield on a short branch which runs at right angles to the main line. The three cities, therefore, are practically one community; their joint population has jumped from about 15,000 to more than 40,000 within the past four or five months. The problem of taking care of this large influx of workers proved to be a most serious one.



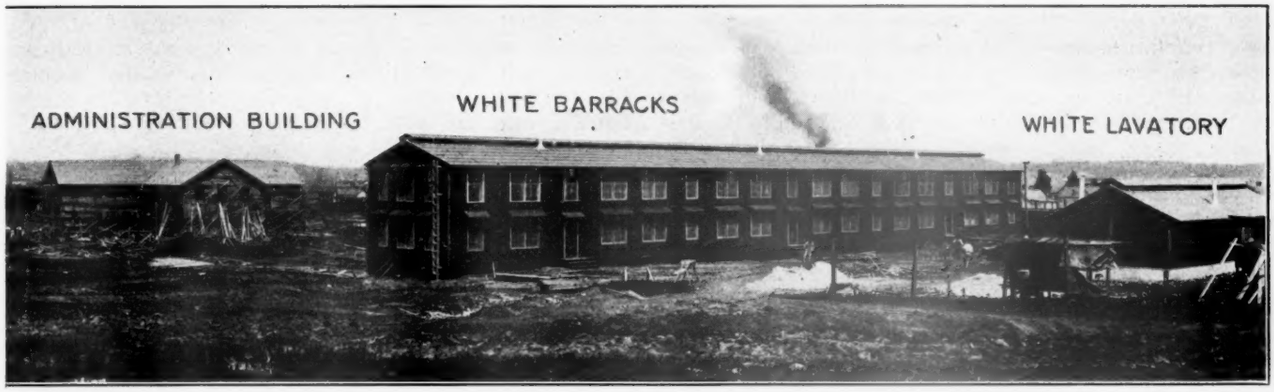
Arrangement of Railroad Y. M. C. A. Buildings at Sheffield

The railway was forced to enlarge its organization and facilities to handle the great amount of construction materials for the nitrate plants and the increased traffic due to the growth in population. Traffic will continue to be heavy after the new plants are in operation. It was almost impossible to hold the new railway employees because of the lack of facilities for housing and feeding them. In addition to the increase in trainmen and yard forces, there was a considerable addition to the shop and repair forces. The situation became so serious that the officers of the Southern decided that immediate and radical steps must be taken to improve conditions. The problem was further complicated by the necessity for providing separate facilities for the white and the colored men.

President Fairfax Harrison had been greatly impressed by the arrangement of the buildings in the army cantonments that he had visited, and suggested that a similar plan be adopted in providing for the railroad employees at Sheffield. He had also been greatly attracted by the work of the Y. M. C. A. in the army camps and this suggested cooperation on the part of the Railroad Y. M. C. A. in planning for the facilities and plant and administering it after it was completed. To that end, G. K. Roper, Jr., Southeastern secretary of the Railroad Y. M. C. A., was asked to meet E. H. Coapman, vice-president of the Southern, at Washington on Monday, May 6. As a result of a conference of these two men with Thomas H. Gatlin, chief engineer, and H. W. Hesselbach, chief architect, of the Southern, plans were immediately drawn up for a two-story barracks building for white men, 29 ft. 6 in. by 190 ft. to accommodate 198 men; also a smaller building for the colored men to accommodate 66. Included in the plans was a mess hall, 20 ft. by

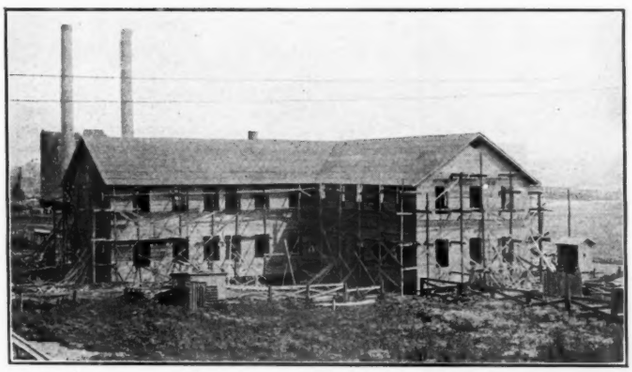


Plans for Lavatory Buildings for White and Colored Men



General View of Railroad Y. M. C. A. Buildings at Sheffield, Ala.

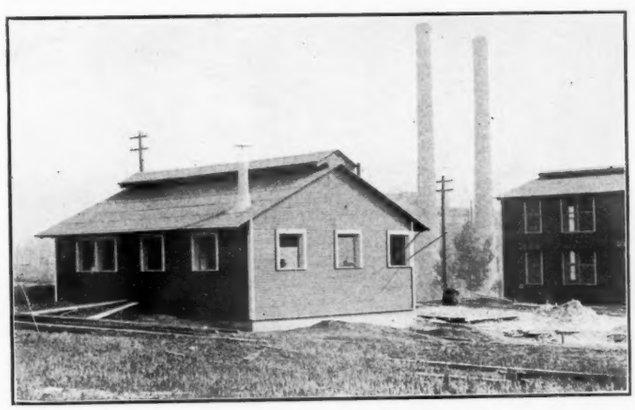
156 ft. 6 in., with one end 76 ft. 9 in. long for the white men; a middle section 35 ft. long for the kitchen; and an end section 44 ft. 5 in. long for the colored employees. One hundred and eighty men can be fed at one time. Located 80 ft. from each of the barracks buildings are lavatories



Administration Building in Course of Construction; Nitrate Plant in the Rear

with shower baths; the lavatory for the white men is 20 ft. by 49 ft. and the one for the colored men is 20 ft. by 28 ft.

A large two-story administration building completes the

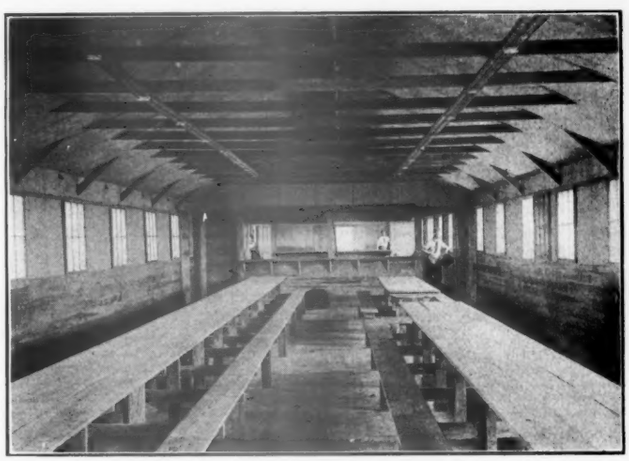


Lavatory for Colored Men; Nitrate Plant in the Rear

group. This is 29 ft. 6 in. by 100 ft. 6 in. with a wing 29 ft. 6 in. wide and 48 ft. long. The wing is used as living quarters for the Y. M. C. A. employees. The first floor of the administration building proper has a large lobby with the office and check room at one end and reading and class rooms at the other end. On the second floor of this building is an auditorium, 28 ft. 4 in. by 54 ft. with a stage; the seating capacity is between 300 and 400.

The rapidity with which the plant was constructed and equipped is indicated by the fact that 27 days after the conference on May 6, the Railroad Y. M. C. A. secretary who was to be in charge was on the ground and the plant was taking care of railroad men. Thirteen days after construction was actually started, men could have been housed in the barracks. The buildings are of wood, well built and painted; the administration building is of fairly permanent construction as it will continue in use indefinitely, although future developments may be such that the other buildings will not be required. The buildings are located convenient to the engine terminal and yards.

At one time it looked as if the lack of materials might

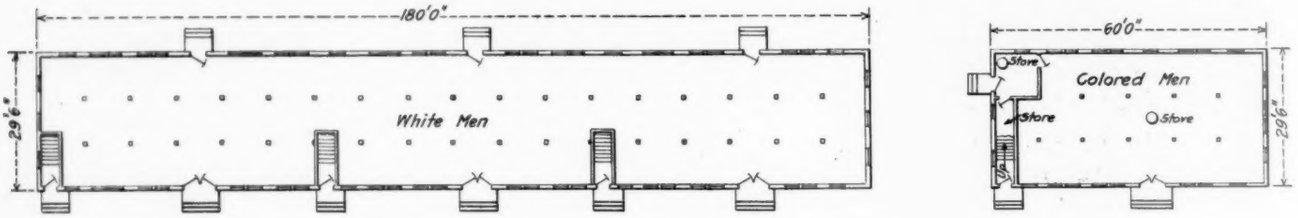


Dining Room for White Men

delay the work, but this was overcome by co-operation on the part of the contractors who were building the nitrate plants. Immediately after the conference on May 6, Mr. Roper hurried to Cincinnati, purchased the furniture and equipment, which was immediately loaded on freight cars and sent to Sheffield in charge of a Southern Railway em-employee.

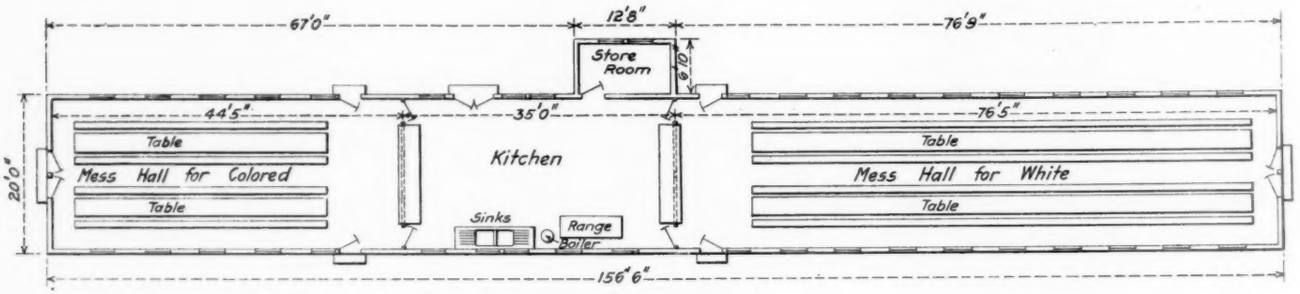
Dr. H. R. Thompson, the Y. M. C. A. secretary who took charge of the plant on June 1, was transferred from Decatur, Ala., where he had been in charge of the Railroad Y. M. C. A. He rapidly gathered an organization about him, including competent assistants for work among both the whites and the blacks and an experienced manager for the restaurant. At the present time several hundred men are being fed each day, 750 meals being served on the average.

About 100 men are sleeping in the barracks. While the cost of administration will be increased by the use of several buildings instead of concentration of all of the work in one or two large buildings, it was believed by the railroad officers that the arrangement which was adopted will add to the convenience and comfort of the men; important factors which had to be considered were the fact that the two races must be provided for separately, and the climatic conditions.



Plans of Barracks Buildings for White and Colored Men

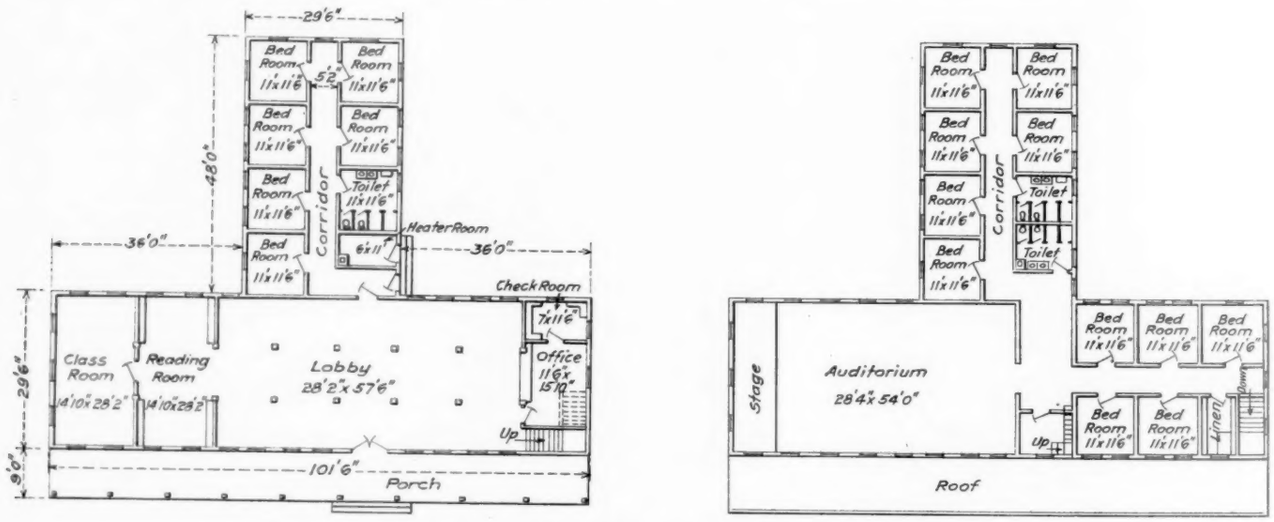
The equipment of the auditorium includes a motion picture outfit, and indications are, judging from Dr. Thompson's past record, that the recreation of the men will not be lost sight of either indoors or through the promotion of outdoor sports.



Mess Hall and Kitchen

The cost of the plant was originally estimated to be in the neighborhood of $60,000, but this figure was exceeded because of the higher prices which it was necessary to pay for labor and materials; this includes the equipment and adequate heat, light and water facilities.

ELECTRIFICATION IN ITALY.—A correspondent who immediately before the outbreak of the war was in Italy inspecting the electrically-operated railways in that country, has written the Railway Gazette, London. He gives the interesting information that at the time of his visit trains were still being operated by steam locomotives between Modane, the terminus of the Paris, Lyons & Mediterranean, through the Mont Cenis Tunnel, and Bardonecchia, the first station on the Italian side of the frontier, a distance of 18.717 km. (11.7 miles), although the electrical equipment had been provided through the tunnel. On asking for an explanation as to why the electrical locomotives did not run through to Modane the correspondent was told by an Italian engineer, with a shrug of his shoulders, that the reason was political. His attention was, at the same time, drawn to the fortress at Bardonecchia and that at Exilles, above the left bank of the river Dora, 17½ miles east of Bardonecchia, both command the Mont Cenis Pass between Italy and France.



First and Second Floor Plans of Administration Building

Proposed New Boundaries for Standard Time Zones

Elaborate and Ingenious Plan for Relieving All Large Cities of the Double Time Standard

By Emerson W. Judd
Statistician, Wood, Struthers & Co., New York.

BY DIRECTION OF CONGRESS the Interstate Commerce Commission is about to revise the boundaries of the zones of Standard time. The "Daylight-Saving Act" recognizes the four existing zones in the United States, exclusive of Alaska—Eastern, Central, Mountain and Pacific—based, respectively, on the time of longitude 75 deg., 90 deg., 105 deg. and 120 deg. west of Greenwich; and it requires the Interstate Commerce Commission to define the limits of each zone, "having regard for the convenience of commerce and the existing junction points and division points of common carriers." To this end public hearings have been given.

For carrying out the purpose of Congress thus to promote the public convenience, the Interstate Commerce Commission holds manifestly a better position than that occupied by the late William F. Allen, when, in 1883, by devising the system of time zones as they stand today, throughout the world, he placed his name among the great ones of the nineteenth century. The zone limits were then defined primarily with regard to railway division points, and only secondarily with regard to the public convenience.

The Act of Congress does not in so many words make it the duty of the commission to fix time division points for such railroads as cross the boundaries of adjoining zones. Practically, however, this is the entire problem. The real business of the commission under the act is to establish railway time division points, for by so doing it will, in effect, define the zone boundaries.

In the circumstances, it is to be presumed that any changes that are ordered by the commission will have been first agreed upon by the commission and the Railroad Administration. In my opinion the following principles should be recognized:

1. No large city should have two time standards; that is to say, the boundaries between zones should avoid all large cities.
2. Diversions of the zone boundaries from the normal position, mid-way between the governing meridians of longitude, should be ordinarily to the west and not to the east.
3. Communities closely associated, politically or commercially, should have the same time standard, if possible.

That adherence to the first principle here laid down is demanded by every consideration of public convenience, can require no argument. For the same reason that two zones of railroad time in New York, Philadelphia, Chicago or St. Louis would be intolerable, two standards are disadvantageous in Buffalo, Pittsburgh, Cleveland and Atlanta.

The second rule is in accordance with the principles of daylight saving. Places geographically in the Eastern zone that use Central time, because their railroads run on Central time, lose afternoon daylight to which they are entitled.

Strict compliance with the third principle in the relocation of boundaries would prevent the running of zone lines between important neighbors, like Cleveland and Youngstown, or Youngstown and Pittsburgh.

A partial list in the Official Guide of dividing points in the United States between the Eastern and Central sections contains 38 names of places. Among them are nine cities having populations in excess of 60,000—Akron, O., Atlanta, Ga., Buffalo, N. Y., Cleveland, O., Dayton, O., Detroit Mich.. Erie, Pa., Pittsburgh, Pa., and Youngstown, O. Other cities in the East of considerable size, similarly afflicted with double railroad time, are Newcastle, Pa., Wheeling and Huntington, W. Va., and Augusta, Ga., and in the West, Salt Lake City, Utah, and El Paso, Tex.

If the pending revision of zone limits accomplishes nothing else, it should at least, for the general comfort, transfer as many time division points as possible from large places to smaller.

The normal line of division between the Eastern and the Central zones is the meridian of 82½ deg. west longitude. Going south across the United States this meridian leaves Lake Erie near Huron, O., between Sandusky and Lorain, and reaches the Gulf of Mexico at Tampa, Fla. Theoretically, therefore, Eastern standard time should cover the United States from Machias, Me., as far west as a line run from north to south approximately from Sandusky through Mansfield, Mt. Vernon, Newark and Wellston, O., Kenova, W. Va., Pikeville, Ky., Norton, Va., Johnson City, Tenn., Asheville, N. C., Greenville and Abbeville, S. C., Thomson and Waycross, Ga., Lake City and Brooksville, Fla., to Tampa. From the Ohio river to the Savannah river the present recognized dividing line follows this course rather closely. North of the Ohio river and south of the Savannah river the zone boundary lies far to the east of its proper place. For this reason those parts of Ohio and of Pennsylvania east of the line from Sandusky to Kenova which now employ Central line locally, and also southeast Georgia and the eastern half of Florida, are robbed of their birthright to afternoon daylight. For this the railroads that operate on Central standard time in the territory just specified are responsible.

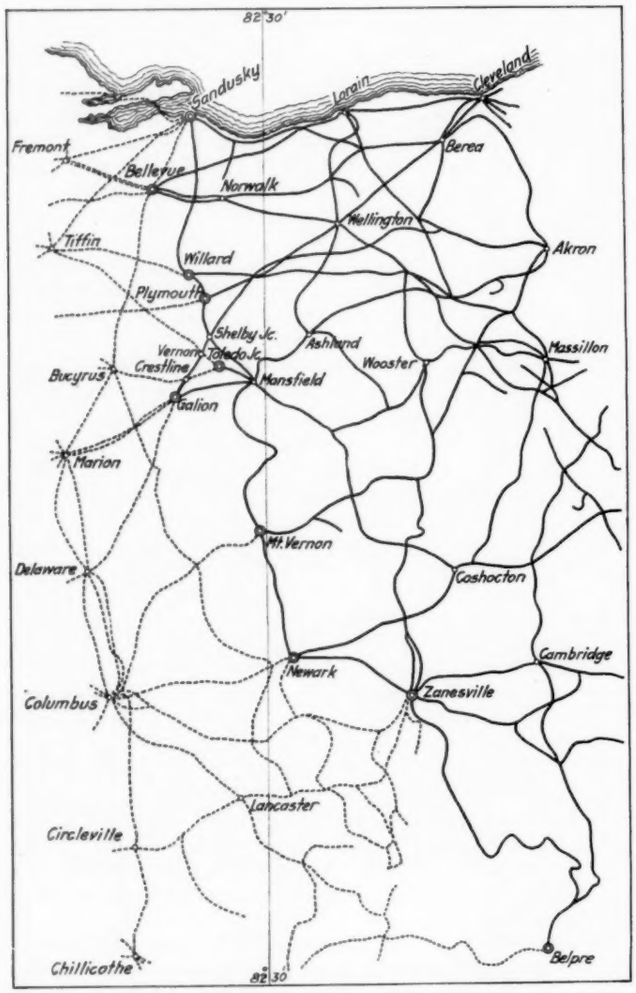
As originally located the boundary between the Eastern and the Central standards ran from Buffalo through Salamanca, N. Y., to Pittsburgh, and thence to Wheeling and Kenova. Buffalo, the point of extreme deflection of the boundary to the east, is in longitude 78 deg. 50 min., Pittsburgh in longitude 80 deg. In distance by the New York Central, Buffalo lies 230 miles east of the normal division point in longitude 82½ deg.; in distance by the Pittsburgh, Cincinnati, Chicago & St. Louis, Pittsburgh is 160 miles east and by the Pittsburgh, Fort Wayne & Chicago is 175 miles east of the normal boundary.

This astonishing divergence from the fundamental principles and from the general application of Mr. Allen's scheme was due to the refusal of the Lake Shore & Michigan Southern and the Pennsylvania Company in 1883 to agree to any plan that would compel them to operate in two zones. The opportunity has now come for a suitable relocation.

Within recent years the Baltimore & Ohio has extended its Eastern zone from Pittsburgh to the western edge of Pennsylvania at Newcastle Junction, and the Erie has made Eastern time its standard all of the way from New York to Cleveland, Marion and Dayton. Furthermore, the Pittsburgh & Lake Erie has adopted the Eastern standard west as well as east of Pittsburgh, thus making, in connection

with the Erie, an Eastern standard line from Pittsburgh to Cleveland.

The Wheeling & Lake Erie for two or three years prior to March 31, 1918, used Eastern time, carrying this standard from Wheeling to both Cleveland and Toledo, while its Pittsburgh connection, the Pittsburgh & West Virginia, made, with the Wheeling & Lake Erie, a second Eastern standard route between Pittsburgh, Pa., and Cleveland, Ohio.



The ten proposed boundary stations are indicated each by two circles.

Proposed New Boundary Between the Eastern and the Central Time Zones*

On March 30 last all of New York, all of Pennsylvania and all of northeastern Ohio, as far west as the line of the Wheeling & Lake Erie from Cleveland through Kent and Canton to Wheeling, had Eastern railroad time, save only stations on the New York Central west of Buffalo, the New York, Chicago & St. Louis, the Pennsylvania west of Pittsburgh, Oil City and Erie, the Baltimore & Ohio west of Newcastle Junction, and one or two short local roads. Thus, in the interest of the public, the limits of the Eastern standard had been carried far west from the Buffalo-Salamanca-Pittsburgh-Wheeling line, toward its normal location.

All of the populous region here outlined is Eastern standard territory by geographical location, by general desire of the inhabitants, and by the principles of daylight saving. Locally for the most part it lives, as undoubtedly it should live, by Eastern time, although in sporadic instances in Ohio, as if the discomfort of two standards of railway time were not sufficient, a third standard, sun time, has been adopted by some for domestic use.

The primary problem to be solved by the Interstate Commerce Commission now is how to run a line from north to south across the state of Ohio, as nearly as may be along the meridian of 82½ deg., in a way to make the transfer of dividing points from Buffalo and Pittsburgh to places in Central Ohio as easy as possible for the New York Central, the Nickel Plate and the Pennsylvania. In view of the transverse situation of some of the roads and of other considerations, it would seem to be advisable to run the new line, approximately from northwest to southeast, from Sandusky, O., to Bellevue, to Willard (Chicago Junction), to Plymouth, to Toledo Junction, to Galion, to Mt. Vernon, to Newark, to Zanesville to Belpre.

By such a relocation the ten places here named, all of them in Ohio, will be substituted as dividing points between the time sections for 25 such points now existing in New York, Pennsylvania, Ohio and West Virginia.

That the line here indicated will encounter objections more or less strenuous from some of the railroads concerned, is taken for granted. But what new definition of standard-time limits can be ordered that will be, at first thought, universally acceptable?

The principal criticism of this line will be that it contemplates the establishment of time division points at other places than existing operating terminals, or operating division points. That it does so must be frankly admitted. But even slight familiarity with the existing operating division points of the railways of Indiana, of Ohio and of western Pennsylvania will bring the conclusion that, if present operating division points must invariably govern the location of time division points, the confusion of Eastern and Cen-

*Under the suggested plan all of the mileage east of the dividing line will have Eastern time. These roads are shown in solid lines, and those on the other side by broken lines. No mileage west of the line will have Eastern time except the Cleveland, Cincinnati, Chicago & St. Louis between Vernon and Crestline. The different roads would be divided as set forth below:

Sandusky

Eastern time—New York Central (Main Line) east.
Baltimore & Ohio.
Central time—New York Central (Main Line) west.
Lake Erie & Western.
Cleveland, Cincinnati, Chicago & St. Louis.
Pennsylvania.

Bellevue

Eastern time—New York, Chicago & St. Louis east.
New York Central (Norwalk Branch) east.
Wheeling & Lake Erie east.
Central time—Wheeling & Lake Erie west.
New York Central (Norwalk Branch) west.
New York, Chicago & St. Louis west.
Pennsylvania.

Willard

Eastern time—Baltimore & Ohio north, east and south.
Central time—Baltimore & Ohio west.

Plymouth

Eastern time—Baltimore & Ohio north and south.
Northern Ohio east.
Central time—Northern Ohio west.

Toledo Junction

Eastern time—Pennsylvania east.
Central time—Pennsylvania west.
Pennsylvania (Toledo Division) west.

Galion

Eastern time—Cleveland, Cincinnati, Chicago & St. Louis east.
Erie east.
Central time—Cleveland, Cincinnati, Chicago & St. Louis west and south.
Erie west.

Mount Vernon

Eastern time—Baltimore & Ohio.
Pennsylvania (Akron Division) east.
Central time—Pennsylvania (Akron Division) west.

Newark

Eastern time—Baltimore & Ohio north and east.
Pennsylvania east.
Central time—Baltimore & Ohio south and west.
Pennsylvania west.

Zanesville

Eastern time—Baltimore & Ohio.
Pennsylvania (Zanesville Division) north.
Pennsylvania (Ohio River & Western) east.
Wheeling & Lake Erie.
Central time—Zanesville & Western.
Pennsylvania (Zanesville Division) south.

Belpre

Eastern time—Baltimore & Ohio east and north.
Central time—Baltimore & Ohio west.

tral standards that now prevails between Lake Erie and the Ohio river never will be corrected. It will presently be put up squarely to the several great railroads or to the Federal Railroad Administration to conform their train despatching, in the public interest, to certain new dividing points of time named by public authority; and beyond a doubt they will prove themselves to be quite equal to the task.

For the public the essential feature of the Sandusky-Belpre line, apart from its avoidance of the larger cities, is that it reduces the overlapping of the two zones to a very small minimum. For the railroads its convenience consists in this, that, by avoiding the crossing of branch roads, it creates but few points of change.

The New York Central now changes time at two places, Buffalo on the main line and Sutton, Pa., on the Clearfield branch. The new plan, without increasing the number of dividing points, substitutes Sandusky on the main line and Bellevue on the Norwalk branch.

The Pennsylvania system now has both standards of time in three cities—Pittsburgh, Oil City and Erie, Pa. The plan replaces these three dividing points by four in eastern Ohio—Toledo Junction, Mt. Vernon, Newark and Zanesville—two of them points on major lines and two less important crossings.

The Erie should resume use of the Central standard between Galion and Dayton. Even now the Erie's thrust of the Eastern standard into Central territory between Marion and Dayton is as indefensible on any ground of public convenience or necessity as the New York Central's similar thrust of the Central standard into the Eastern territory between Dunkirk, N. Y., and Titusville, Pa.

South of Ohio it will be found that, with but few rearrangements of division points, the original line of demarkation between the Eastern and the Central zones may be made to coincide in the main with natural barriers, and to a noteworthy extent with state boundaries. The proposed rectification will place in the Eastern zone the state of West Virginia, save only Kenova, the entire states of Virginia and South Carolina, and all but a part of one county in North Carolina; will leave in the Central zone all but a fraction of one county of Kentucky, and substantially all of Georgia; and will transfer from the Central to the Eastern zone half a dozen counties in East Tennessee. The route suggested is from Belpre, O., down the Ohio river, via Kanauga, to Kenova, W. Va., to Elkhorn City, Ky., to Cumberland Gap, Tenn., to Morristown, to Murphy, N. C., to Franklin, to Toccoa, Ga., to Hartwell to Elberton, to Augusta, thence down the Savannah river to the Seaboard Air Line near Myers, to Central Junction, to Bridge Junction, thence to the sea. This relocation will retain six of the existing dividing points, will eliminate eleven, and will create five new ones, a net gain of six.

By the adoption in toto of the dividing points between the Eastern and the Central time sections that have now been suggested for the railroads south of Lake Erie, the number of such points would be reduced from 42 to 21, or 50 per cent.

In the United States south of Lake Erie today 74 cities, towns or hamlets have both Eastern and Central railway time because two or more railways meeting or crossing operate on different standards, or a single road changes from one standard to the other. These places range in size from Cleveland, with 560,663 inhabitants, Pittsburgh, with 533,905, and Buffalo, with 423,715, down to mere railroad crossings. The total population of the 74 places is 2,435,000. The rectification here proposed reduces the number of double-standard railroad junctions to 23, of which 13 are in Ohio, one each in West Virginia, Kentucky and North Carolina, two in Tennessee and five in Georgia. Among these 23 places, the largest is Augusta, Ga., 41,040 population, and only two others—Zanesville and Newark, O.—have as many as 20,000 people each. These 23 places have 162,000 inhabitants all told.

Numerous places of considerable magnitude, not junctions, are served by two railways more or less closely parallel, running one on Eastern the other on Central time. Warren, Pa., Beaver Falls, Pa., and Warren, O., are good illustrations of this state of things. Twenty-eight such places of 500 population or upward—several of them cities of magnitude like the three just named—may be counted in New York, Pennsylvania and Ohio, and two in other states. The thirty places have 148,000 inhabitants. Under the plan of readjustment above outlined, there will be no double standard places of this description large enough to appear in the census.

Combining the foregoing totals, it appears that the limits of standard time as now "observed and used" by the railroads south of Lake Erie are such that 104 railway junctions or other railway towns, with an aggregate population of 2,583,000, labor under the disadvantage of having both Eastern and Central railroad time. Adoption of the proposed new zone limits would reduce the number of double standard places from 104 to 23, or 78 per cent, and the number of people immediately concerned from 2,583,000 to 162,000, or 94 per cent. All of the railway mileage of the country east of the proposed Sandusky-Savannah line would operate on Eastern time, while west of that line the only road on Eastern time would be five miles of the Big Four between Vernon and Crestline, O.

The time problems in Michigan, in Texas and in the territory west of the Missouri river are of a similar nature but fewer and more easily settled.

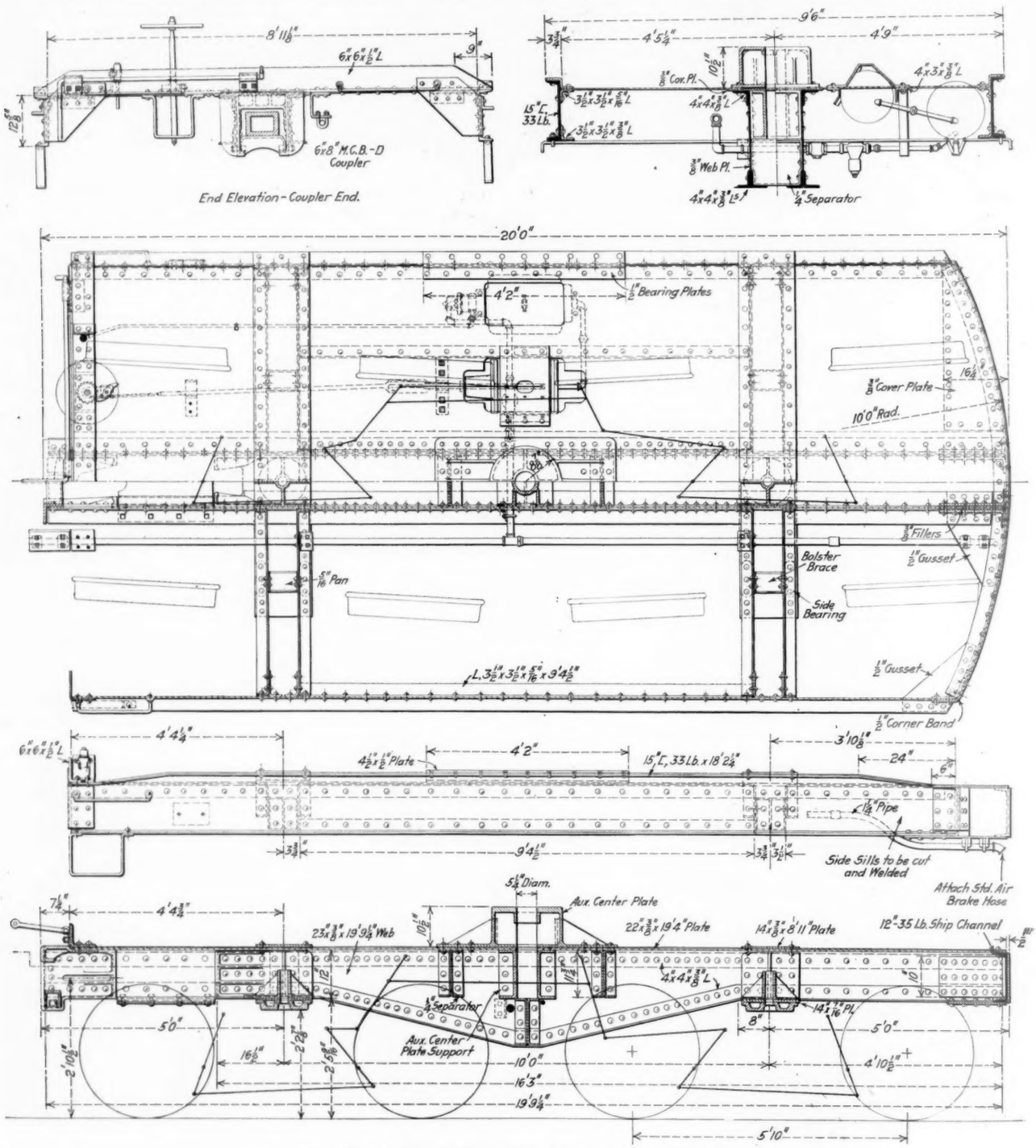
French Official Photo Copyright by Underwood & Underwood, N. Y.

The Station at Chateau-Thierry

Special Cars for Transporting Heavy Naval Guns

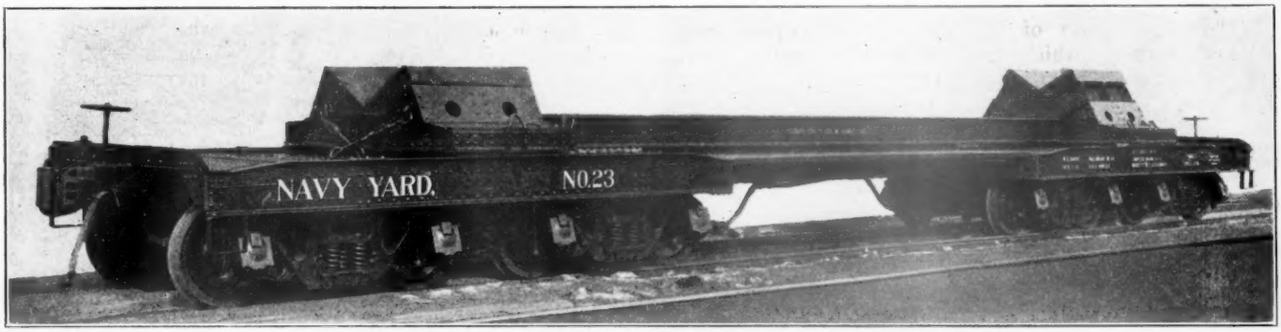
Complete Unit Is 56 Ft. Long and Will Traverse Curves with 100 Ft. Radius; Carries 286,000 Lb.

THE MOVEMENT of big guns by rail requires special equipment, which often involves interesting features of construction. A typical example is found in the gun transport car recently delivered to the Navy Department by the Pullman Company. This car is intended to be used for the transportation of the unmounted barrels of navy guns. It is designed to handle 16-in. guns, which are 68 ft. long and weigh 286,135 lb., but can also be used for smaller guns. An idler is required when handling 16-in. and 14-in. guns, but smaller guns do not project beyond the ends of the car. The design of the car permits operation over curves as sharp as 100 ft. radius.



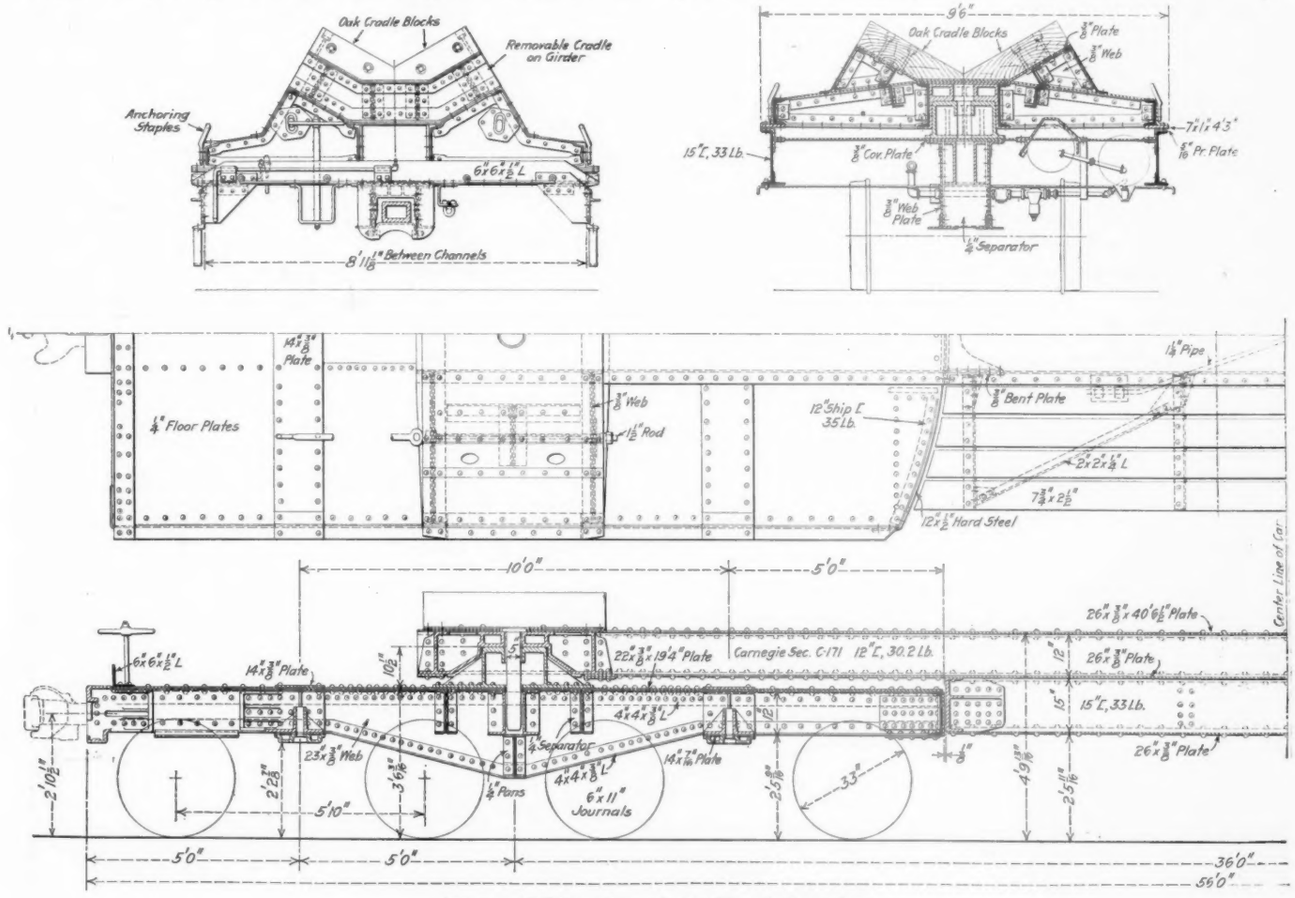
Details of the Carrier Units of the Naval Gun Car

The weight of the car complete is 81,000 lb. and the length over the striking castings is 56 ft. When carrying a 16-in. gun the total weight at the breech end will be 165,317 lb. The complete car consists essentially of two flat cars of special design with a bridge placed on them which is arranged to carry the load. The two flat cars on which the bridge is carried are mounted on 70-ton trucks, spaced 10 ft. from center to center. The cars are designed to perform two functions, first to carry the load placed on the auxiliary center plate in the center of the car, and second to transmit the buffing and pulling stresses to the bridge. The center sills are of the fishbelly type 24½ in. deep at the center and 12 in. deep at the bolster, made up of two ⅜-in. web plates. Each web plate has the bottom edge reinforced with two 4-in. by 4-in. by ⅜-in. angles, while at the top edge there is a single angle on the outside of each plate. A cover plate ⅜ in. thick and 22 in. wide extends the entire length of the car. Between the sills at the center of the car are two pressed steel separators placed back to back. Between these and the cover plate is the auxiliary center plate support. The auxiliary center plate rests on the cover plate and is further supported on the ends by separators between the web plates. The bolsters are made up of two pressed steel pans spaced 7 in. apart, with fillers above the side bearing, and top and bottom cover plates.



High Capacity Car Specially Designed to Carry 16-In. Guns

The outer end of the center sill carries the usual draft gear and has a straight end sill. The inner end is arranged to transmit the buffing forces to the bridge and the end sill is in the form of an arc of a circle concentric with the auxiliary center plate. This curved end sill is a 12-in., 35-lb. ship channel reinforced by a cover plate and faced on the outer surface with a ½-in. by 12-in. spring steel plate. The



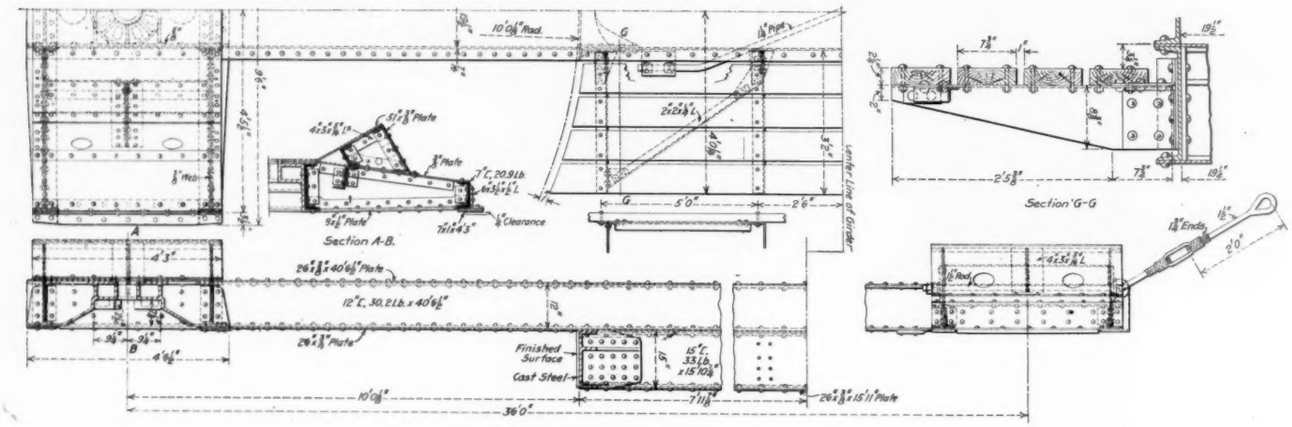
Plan and Elevation of the Naval Gun Car

end sill is fastened on either side to 15-in., 33-lb. channels, which form the side sills. An angle iron 2⅝ in. from the top flange forms the support for the deck, which is made of checkered steel plate. Between the bolsters, the side sills are further reinforced by an angle iron along the bottom edge.

The bridge has a large steel casting on each end, which fits over the auxiliary center plate. These center castings are spaced 36 ft. from center to center and are joined by a girder made up of two 12-in., 30.2-lb. channels spaced 19 in. apart with top and bottom cover plates 26 in. wide and ⅜ in. thick. Under the center portion of the girder is a buffing member which is in line with the underframes of the flat cars. The buffer member consists of two 15-in., 33-lb. channels with a bottom cover plate ⅜ in. thick. At each end of the channels is a buffer casting which is curved to fit the end sills of a flat car. The lower buffer member carries four brackets on each side, which serve as supports for running boards. The buffer member is designed to remove the buffing stresses from the upper girders and the center plate, and to insure that the stresses will be transmitted to the lower members the auxilliary center plates are given a longitudinal clearance of ½ in. in the center castings.

The end of the girder member carries two cradles which extend to the side sills and resist the tendency of the bridge to tilt. The center portion is formed of a V-shaped cradle in which the gun rests. At the end which carries the breech, heavy timbers are used for blocking. At the muzzle end, where the support must be higher than at the breech, a removable cradle built up of structural steel is provided. Two 1½-in. eye bolts pass through each cradle and provide a means for fastening the gun to prevent any logitudinal movement.

Each of the two flat cars has a separate braking system and the train line is carried under the buffing member and connected to the trucks by the usual standard M. C. B. air hose.



Girder and Buffer Members of the 140-ton Gun Car

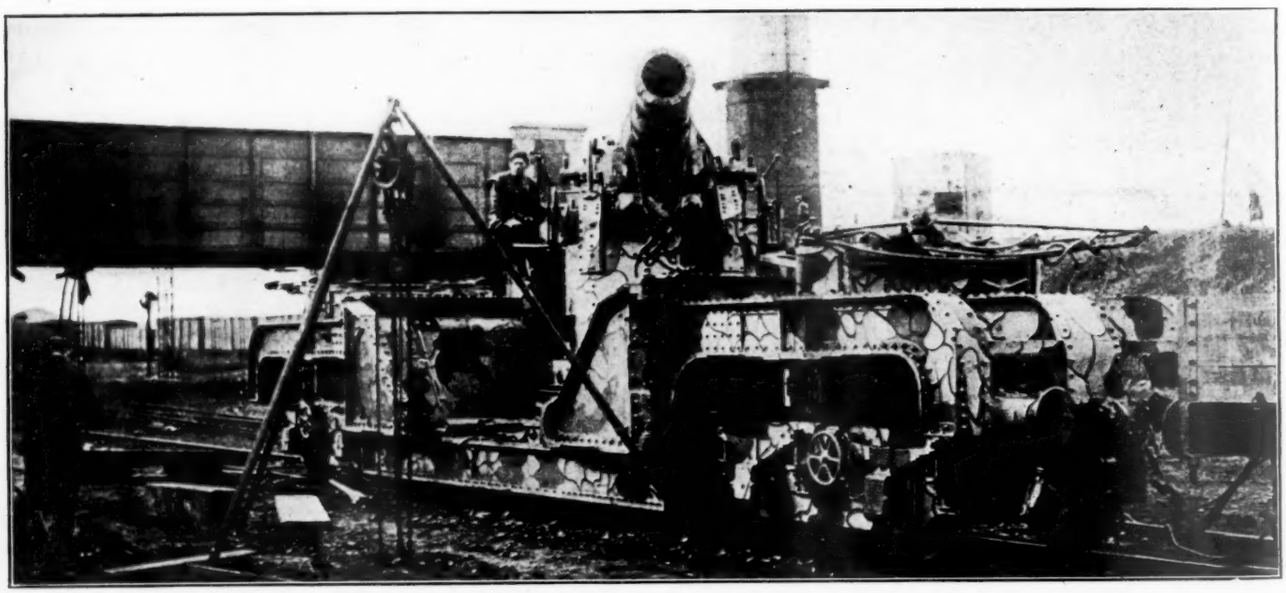
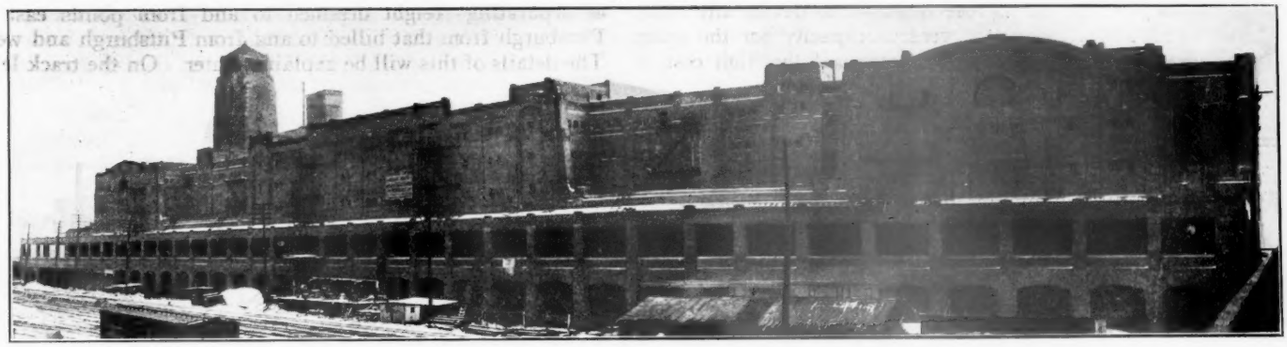


Photo from Press Illustrating Service.

A Camouflaged Gun

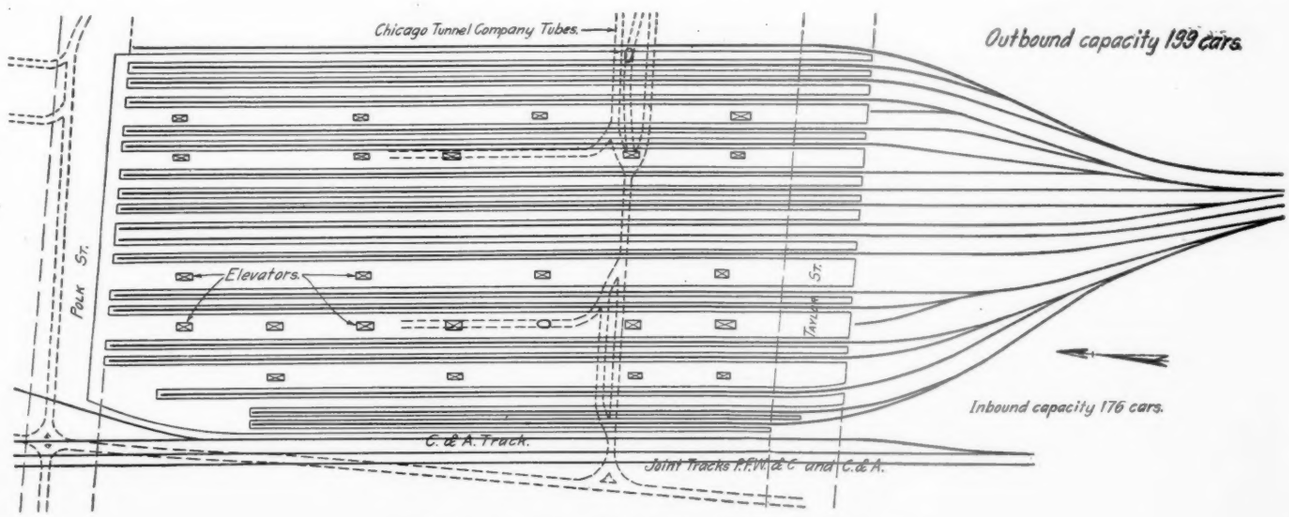


A View of the Entire Building from the Southwest.

Pennsylvania Completes Freight House at Chicago

Monumental Structure of Two-Level Type Affords Ample Accommodations for Large L. C. L. Traffic

THE SURRENDER of ground occupied by several of its freight houses, for the construction of the new Chicago Union station compelled the Pennsylvania Railroad, Western Lines, to build a large new freight station, which has been under construction for several years and will be open for business in a few weeks. Designed to meet present and future needs for a very heavy package freight business concentrated in the business center of the city, the plant is of monumental proportions, and the manner in which provision has been made for receiving and delivering the great tonnage of freight within a limited area without entailing excessive trucking or other expensive operations or the need of any confusing directions to shippers, is both instructive and interesting. As seen from the photographs, special attention has been given to the appearance of this structure, the exterior treatment representing a marked departure from the architecture of most American freight houses.



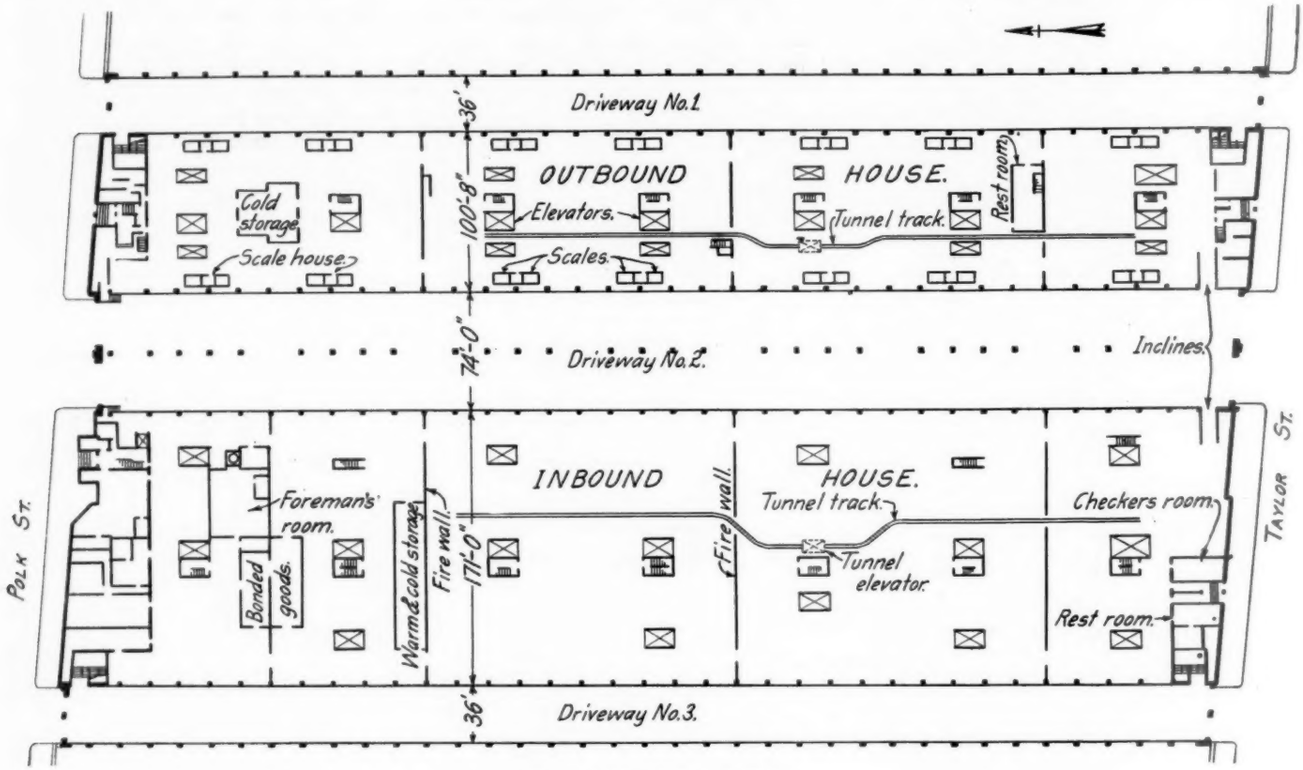
Track Level Plan Showing Platforms and Elevators

Has a Central Location

The building occupies the block between Taylor and Polk streets and between the Chicago river and the south approach tracks to the Chicago Union station. The area is about 745 ft. long by 420 ft. wide. The site is about one-half mile south of the freight stations to be abandoned, but is the nearest available site that afforded a workable plan of sufficient size that was acceptable alike to the railroad and to the city authorities. The latter had refused to approve a plan submitted by the railway for the use of a site several blocks west and north of the one finally adopted, the prime objection being the need for elevated tracks involving long subways for several important streets. However, the selected site is near the center of one of the important freight house districts of the city. Immediately to the north and west respectively are the sites of new freight stations to be built by the Chicago & Alton, and the Chicago, Burlington & Quincy, while two blocks to the southwest is the "Soo" terminal. To the east across the river are the freight houses of the railways entering the Grand Central, La Salle and Dearborn stations. Both Taylor and Polk streets have bridges across the river, affording convenient connections with the east side of the river, as well as viaducts to the west leading over the Union Station tracks.

The station is of the two-level type with the tracks below and the teamways above. This plan was adopted because the site was committed to a separation of the track and street grades by the elevation of the streets on viaducts over the

tracks, and it was out of the question to devise any other plan which would afford as great a capacity for the space available. It was advisable on account of the high cost of

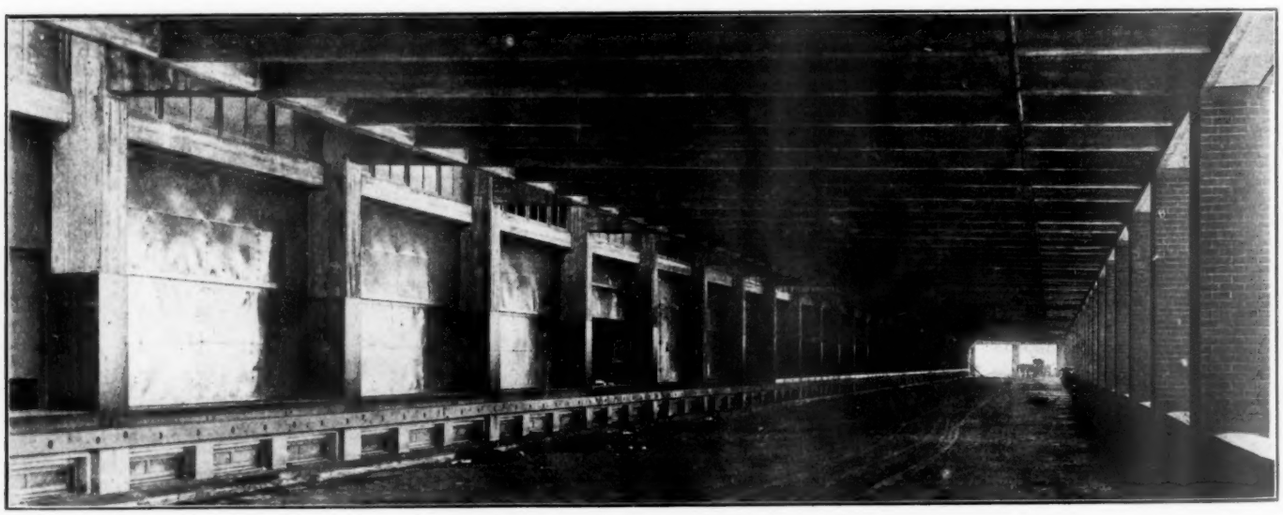


Plan of Street Level Floor

the land, to make an intensive development of the ground.

Independent Inbound and Outbound Houses

From outward appearance and from the structural standpoint, the building constitutes a single unified mass, but there is a central covered driveway 74 ft. wide extending the length of the building on the street level which separates the plant into two clearly defined units, an inbound house and an outbound house. From an operating standpoint there are actually four units since both the inbound and the outbound houses will be divided transversely for the purpose of separating freight destined to and from points east of Pittsburgh from that billed to and from Pittsburgh and west. The details of this will be explained later. On the track level there is no physical evidence of these subdivisions. The entire width of the structure is occupied by a grid of 19 tracks, the 10 adjacent to the river, or the east side, with a capacity of 199 cars to be used for outbound traffic, and nine tracks on the west side with a capacity of 187 cars for inbound traffic.



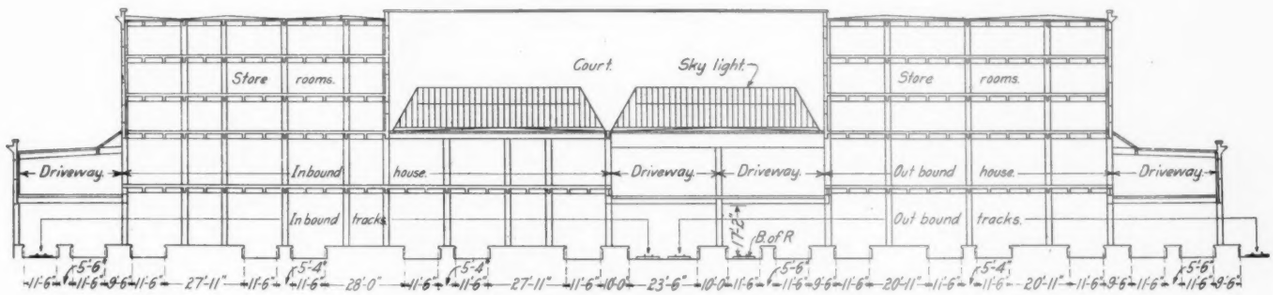
One of the Outer Driveways Serving the Street Floor

Aside from the street level and track level floors, used for handling the regular railway freight business, the building has three floors above the street level for office and storage purposes. The north end of the second floor for a depth of 125 ft. is occupied by the offices of the agent, cashier, billing

department, etc., but all of the remaining space on these three upper floors is arranged in large warehouse rooms for lease as storage space. In general these rooms are 340 ft. by 100 ft., extending the width of the building. They are separated by 12½-in. transverse walls, but part of the area is taken up by light wells 40 ft. by 135 ft. inter-spaced between these rooms, thus affording light along the two sides of each room and extending down to the ceiling of the first floor where sky lights have been installed to furnish natural illumination to the central driveway and a part of the inbound house.

In addition to the central driveway which is 74 ft. wide and is divided by a central row of columns into 36-ft. driveways, one for each house, both the inbound and the outbound houses are served by outer driveways 36 ft. wide also extending the entire length of the building, and connecting with the street at each end. Under such an arrangement the ordinary standards for the width of freight houses as determined in the usual case, with the driveway on one side and the tracks on the other, do not apply. The width of the inbound house was governed to some extent, of course, by the need of a large storage space on the street level but for the most part the determination of the widths of both houses was based on a consideration of the spacing of tracks and platforms, and the location of elevators. One difficulty in this connection was that the outbound house, while requiring practically no space for storage on the street level, required approximately the same amount of space on the lower level as the inbound house because of the size of the outbound business.

The manner in which this problem was solved is indicated in the cross section showing the spacing of the tracks and platforms in direct relation to the arrangement of the driveway and trucking space on the upper level. In this connection it will be noted that there is a platform between each pair of tracks except where the inner tracks of the outbound and inbound groups join at the middle of the house. Most of these platforms are narrow, serving primarily as a convenience for trucking through cars, but under the inbound house which has a width of 171 ft. on the street level, space is afforded for three wide trucking and elevator platforms and under the outbound house which has a width on the street level of only 100 ft. 8 in. there is space for only two of the wide platforms. It will be seen that this arrangement will involve the trucking of freight through a maximum of three cars for outbound traffic and a maximum of two cars for inbound freight. These platforms extend the entire length of the building and will be continued southward the full width of Taylor street as soon as the viaduct on that street is reconstructed.



Cross Section of the Building Looking North

The North End of the Building From the West

The width of the track space between edges of platforms is 11 ft. 6 in. and the minimum vertical clearance from top of the rail is 16 ft. 10 in. As shown in the track plan, the northwest corner has been cut off to allow space for a lead to the proposed Chicago & Alton freight terminal to be located north of Polk street.

The Elevator Arrangement

The freight will be moved between the floors entirely by elevators. Inclined escalators were considered in preliminary designs but proved unsuited to the layout of this structure. The freight will be transferred from the street level of the outbound house to the track platforms by eight 6-ft. by 17-ft. three-ton elevators. Similarly, freight received in cars will be transferred from the platforms to the street level in the inbound house by fourteen 9-ft. by 17-ft. five-ton elevators. Six of these inbound elevators extend to the top of the building so that freight may be transferred directly from the track platforms to any one of the storage rooms. On the upper floors these same elevators will also be used for transferring goods from the storage rooms to the street level of the inbound house for delivery to teams for destination in any part of the city. In case any goods in storage are to be re-shipped by freight, they will be lowered to the street level of the outbound house by a separate set of elevators on the outbound side, but owing to the fact that any goods in storage which are to be shipped out must be checked through the outbound house like any other freight, these elevators do not provide direct passage from the storage floors to the track level. The convenience of the storage

arrangement is indicated in the typical plan of the storage floors in which it is seen that, with the exception of two storerooms on the south end of the building, all of the storerooms have direct connection with the elevators on both the inbound and outbound sides of the building.

In addition to the elevators enumerated above, a 10-ft. by 24-ft. automobile elevator is provided in both the inbound and the outbound houses. These elevators extend to the upper floors and are located adjacent to the south end of the building on platforms provided with short stub tracks to facilitate the loading and unloading of vehicles. On the street floors, inclines from the trucking levels to the central driveway are provided for convenience in delivering automobiles.

Another facility which is found in nearly all freight houses in the business center of Chicago, embodies the elevators affording connection with the subways of the Chicago Tunnel Company, one of these extending to the street level floor of each of the houses, but with no connection on the track level. The trucking floor of each house is also equipped with a line of narrow-gage tracks extending each way from the tunnel elevators to afford trackage space for the tunnel company's cars. All of the freight elevators in the building are operated by the push button system; no elevator men will be employed. These elevators were manufactured and installed by the Otis Elevator Company, Chicago.

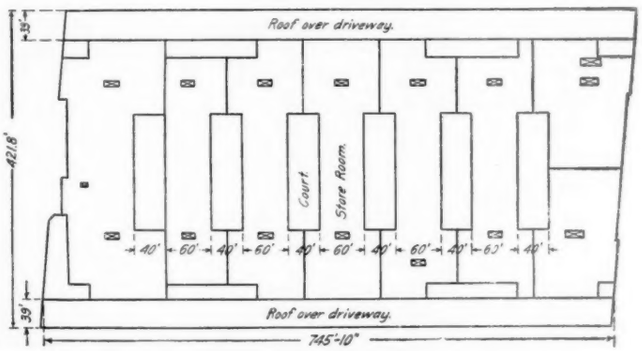
The Clock Tower From the Roof of the Building

Long Team Space Provided

It will be seen from the plan that both the inbound and the outbound houses are provided with about 1,400 ft. of door space, but this is divided into two lengths of 700 ft. and each length is further subdivided between freight east and west of Pittsburgh in the north and south halves of the houses respectively, so the trucking distance from the teamway door to the elevator, at least in the outbound house, cannot be more than 350 ft. This subdivision will also be found of advantage in handling the cars. The north end of the tracks in the outbound house will hold cars for points east of Pittsburgh while the south end will be occupied by cars for destination on the western lines. Some similar plan will probably be devised for the inbound house. The switching of cars to and from the house tracks will be facilitated by a supporting yard to be located south of Twelfth street, but owing to the fact that a new viaduct on Twelfth street is contemplated, the construction of which has been delayed indefinitely, the final layout for the tracks between the freight house and the supporting yard cannot be arranged until some later date.

Structural Details

The building is of fire-proof construction with a steel frame encased in concrete, except in the case of girders 40 in. deep or over, which are covered with hollow tile. The exterior walls are of a red brick with an ornamental treatment involving the use of yellow and green glazed tile. The most impressive feature is a tower located approximately at the center of the Polk street end of the building, which rises to a height of 190 ft. above the level of the street, or 127 ft. above the roof of the main body of the building. The tower is octagonal in section for most of the height with a base width of 50 ft. gradually tapering toward the top where it is reduced to a square section 30 ft. on a side covered with a pyramidal roof finished in green tile. A prominent feature is a clock having four dials 16 ft. in diameter surmounted by the word "Pennsylvania." The architectural treatment for the entire building is unusual, the predominating element being the use of heavy buttresses with a batter that gradually increases from the top to the bottom where it ends in an abrupt curve.



Typical Plan of the Store Room Floors

The interior of the building on the street floor is finished with a light colored hard burned brick. Both the inbound and outbound houses are subdivided on this floor into four rooms by these transverse fire walls, all openings in which are protected by automatic fire doors. The teamway doors of the freight houses which are 20 ft. wide center to center of posts are of steel. These are of two types. Vertical sliding doors parted at mid-height were used wherever feasible, but in cases where the sliding action was not possible or where fire exits was required through them, doors of the cross-folding type were used. All of these doors are attached to a concrete covered transom bar above which transoms are installed.

The driveways are paved with creosoted blocks. The trucking floors are of concrete covered with 1½ in. of asphalt mastic. All of the warehouse floors are of concrete finished with a special hard surface.

The building is supported on pile foundations, using piles 40 to 50 ft. long, 17,000 of which were required for the entire structure. The tower, which is built monolithic with the rest of the structure, is carried on a mat of reinforced concrete five feet thick, supported by 900 piles.

Auxiliary Facilities

Checking offices have been installed in the outbound house at intervals of four doors with a scale on each side provided

with automatic dials placed inside the checking booths. These offices communicate with the foreman's office, near the north end of the inbound house, by pneumatic tubes, which are also used to connect the foreman's office and the billing office on the second floor. Provision has been made for doubling the number of checking offices and scales at any time this may be necessary in the future. In the inbound house, scales have been installed adjacent to seven of the elevators. Each house is equipped with cold and warm rooms, a checker's room, rest rooms and toilet rooms for laborers and teamsters and equivalent facilities are furnished to the clerical forces on the second floor, with the addition of space for installing a kitchen and dining room.

A sub-basement is provided at the north end of the building for the accommodation of the heating and power plant, the principal function of which is fire protection. The entire building is equipped with automatic sprinklers which are served by fire pumps in the power plant in connection with a large water tank in the tower. An electrically operated refrigerator system to serve the two cold rooms is installed in a room on the second floor near the north end of the building.

The design and construction of the freight station has been under the direction of Thos. Rodd, chief engineer, Pennsylvania Railroad, Western Lines, and Robert Trimble, chief engineer of construction, with J. H. Minton, assistant engineer in charge of the design and construction, and T. M. Bole, engineer in charge on the ground. Price & McLanahan, of Philadelphia, were the architects for the building.

Doings of the United States Railroad Administration

Director General McAdoo About to Return to Washington; Standard Locomotives Delayed

WASHINGTON, D. C.

DIRECTOR GENERAL MCADOO is expected to return to Washington in good health next week from his western trip after having been away continuoulsy for two months and after having been away from his office most of the time for four months. During April he toured the country making Liberty loan speeches and during May he was confined to his home by illness for the greater part of the time, spending only a few days at his office, although he was able to do a great deal of important work. About the end of May he left Washington without announcing his destination, seeking relief for his throat trouble and an opportunity for recuperation. After a brief period of rest in the Yosemite Valley he has been travelling over western railroads and holding conferences with railroad officers and members of his staff which have resulted and will result in important changes in methods of handling traffic. He has also kept in touch with important matters that have been referred to him, such as the question of the increase in wages for mechanical department employees, and there have been no indications of any cessation of activity in the Railroad Administration because of his absence. Director Gray, of the Division of Operation, and Director Carter, of the Division of Labor, who have been in the west with Mr. McAdoo, returned on Monday; Director Lovett, of the Division of Capital Expenditure, on Tuesday, and Director Chambers, of the Division of Traffic, returned on Wednesday.

Pershing's Requirements Will Delay Standard Locomotives

The requirements of our armies in France, including the order placed last week with the Baldwin Locomotive Works for 500 additional 80-ton Consolidation locomotives, will delay somewhat the progress in delivery of the Railroad Administration's standard locomotives for use on this side of the water, of which 1,430 have been ordered. At the same time the Railroad Administration is preparing to take out of service the 135 similar locomotives which were built for our armies in France and turned over to eastern roads last winter. These locomotives will be sent to the Baldwin Locomotive Works, which built them, to be put into shape ready for transportation overseas at the rate of five a week until the entire lot is turned over.

The mechanical department of the Railroad Administration expects to compensate for the delay in the construction of the standard locomotives and the withdrawal of the army locomotives from service here by the special efforts which it has been making since last winter to rush the repair of domestic locomotives. A large number of these locomotives are already in shape and are in white lead, ready for next winter. Several of the standard locomotives have already been delivered.

Railroads Not to Pay for Non-Essential Public Improvements

Director General McAdoo in circular No. 44 announces that the Railroad Administration should be consulted in advance where it is proposed by public authorities to make improvements for which a portion of the cost is to be assessed against any railroad under federal control. The circular states that wherever street or road construction and other public improvements are contemplated by the authorities in any state, county, district or municipality, for which a portion of the cost in an amount exceeding $500 is to be charged against any railroad under federal control, the authorities are requested to take the matter up with the federal management of the road directly interested and secure the concurrence of the Railroad Administration in advance.

In the event this is not done the director general will reserve the right to decide whether or not he will participate in the payment.

It is not the attitude of the director general to oppose construction of this character which is meritorious and essential. The director general feels, however, that in the present stress as to the essential labor and material supply all work of this kind which can be postponed without injury should not be undertaken, and the railroad should not be expected to participate in the payment unless the expenditure is indispensable.

Protection for War Department Shipments

The car service section announces in circular CS-20 that in order to properly protect U. S. war department shipments when special protection is considered necessary, agreement has been reached with H. M. Adams, chief, inland traffic service of the war department, providing for necessary guard to protect the property in accordance with the following regulations, and all railroads will arrange accordingly.

A. The war department will acquaint the originating railroad either direct or through the car service section when it is desired to provide a guard for certain shipments,

and will advise as to the number and personnel of the guard except as provided in paragraph C.

B. The department of the army to whom the property belongs shall furnish the guard at its expense, and provide transportation for each person.

C. The guard must in all cases consist of officers or enlisted men of the army, except that in the case of certain articles, such as gun carriages and other equipment moving on its own wheels, also poisonous gases and liquids, a civilian expert, designated by the department interested in the shipment, may constitute the guard or part thereof, and that in cases where the sending of a military guard is impracticable, the department interested in the shipment may, by obtaining a special permit from the United States Railroad Administration through the inland traffic service of the war department, place a civilian guard over a particular shipment.

D. Cars under guard shall be placed in the train immediately ahead of the caboose, except shipments of explosives, gas, or inflammables—which commodities should be kept as near the center of the train as possible, as required by the regulations of the Interstate Commerce Commission covering Transportation of Explosives and Other Dangerous Articles.

E. Sleeping accommodations shall be provided in the caboose for a guard not exceeding four men.

F. If a larger guard is required, special arrangements shall be made providing for a caboose, coach, or sleeping car for their accommodation.

G. Tickets issued to guards shall show that the holder is in charge of a government shipment as a guard, and is entitled to travel on the freight train carrying such shipment.

H. Routing of the ticket shall be the same as the route over which the shipments are to move, and in case of diversion or change in routing while in transit, the railway officers shall effect the necessary change in the routing of the ticket or tickets held by the guard.

I. Waybills must be indorsed showing that a war department guard is traveling with and in charge of the shipment in accordance with these regulations.

J. Officers, agents and yardmasters of the carriers are instructed to direct and otherwise assist the guard in moving through yards, permitting the guard then immediately in charge to accompany car or cars at all times, and to take such steps as are necessary to prevent connecting trains leaving without the full guard.

K. When two or more cars are included in a shipment under guard, and it is necessary to hold one or more cars for repairs, the entire shipment shall be held and forwarded in one train, to the end that the guard shall not be separated. In such case prompt advice shall be telegraphed to the Car Service Section, United States Railroad Administration, Washington, D. C., and by it transmitted to the director of inland traffic, war department.

The above arrangements are not to be extended in any case to or be construed as authorizing the transportation of a guard in charge of war department material for the purpose of expediting movement of any shipment.

Fidelity Bond Premiums Charged to Operating Expenses

General Order No. 36 provides that premiums on fidelity bonds, which have heretofore been paid by or charged to officers, agents, and employees on transportation lines now, or which may hereafter be placed, under federal control, shall no longer be so handled but shall be charged to operating expenses.

Bond for Freight Charges

The division of public service and accounting has issued a form of surety bond, prescribed by the division of law, which is to be used in all cases where bond is required to be given by shippers and consignees for the payment of freight charges in accordance with General Order No. 25.

Rate Procedure Under Federal Control

Arguments before the Interstate Commerce Commission on July 24, on the question as to whether the justness and reasonableness of rates, etc., initiated by the director general under the authority of the federal control act must be determined upon original complaints and new proceedings or whether such issues may be properly raised by amendments to pending complaints, brought forth a variety of ideas as to the status of rate-making and regulation under the new regime. Most of the complaints pending before the commission attack rates which were superseded on June 25 by the new higher rates put in effect under General Order No. 28.

R. Walton Moore, assistant to the general counsel of the Railroad Administration, calmed some of the fears of the attorneys for the shippers by saying that the administration had no idea of insisting that new complaints be filed because the rates complained of are no longer in existence, but would concede that they may be amended to bring into issue the new rates. He took the position that the director general should be made a party defendant to all complaints against rates initiated by the administration and said that many of the 700 cases in the formal docket would probably have to be reopened because the issues they involve have passed out of existence or been changed as a result of the new rates. Cases involving the reasonableness or discriminatory feature of the old rates were dead because the commission could not change them by prescribing new rates for the future without reference to the director general's rates.

Most of the shippers' representatives present seemed satisfied in the main with this position but raised some additional points. John S. Burchmore referred to the distinction between cases where the cause of complaint arises solely from the new rates and those in which the relation formerly complained of still exists because the rates have been advanced by corresponding amounts and said that the commission should have the same jurisdiction over such cases as in the past. One attorney wanted the director general made a party to all cases for the protection of the shippers, saying that Mr. McAdoo is now the "czar" and that an order for reparation, for example, should run against him. Commissioner McChord asked if Mr. McAdoo had been a czar before March 21, the effective date of the law authorizing him to initiate rates, and whether he should be made a party to cases arising before that time. J. B. Norman objected strenuously to the idea of making the director general a party to the rate cases and also to the appellation of "czar." He called attention to the fact that the law refers to the rates of "the carriers" and does not mention the director general, and declared that the authority of the Interstate Commerce Commission over rates is the same as it was except that it cannot suspend the director general's rates or initiate a proceeding against them of its own motion.

Frank Lyon caused some smiles by declaring that the rate wisdom of the past no longer avails and that he regarded the director general as the representative of the shippers, to be approached not as a party to litigation but by requests to make proper adjustments. He had attempted to present this idea in letters to the director general and he admitted that the replies he had received from his railroad subordinates had been somewhat disappointing but he thought the fact that shippers had been appointed members of the freight traffic committees was evidence that he was "struggling with the idea" that he was the representative of the shippers. Mr. Lyon said that former criteria of the reasonableness of rates have gone into the discard; that no

one pretends that the new increased rates are intended to represent reasonable rates. They represent rather the fact that the Railroad Administration needs the money, he said.

Marking of Freight for Government

For the purpose of preventing the practice of some shippers of seeking to obtain privileges for their shipments to which they are not entitled by marking them to indicate that they contain government freight, and to systematize the marking of government shipments, General Order No. 38, issued on July 24, provides that on and after August 15 the following requirements and provisions shall apply and be observed in respect to the shipments hereinafter described.

1. Shipments intended for use of any one of the government departments, either directly or through a contractor with the United States government, shall not be entitled to or receive any privilege which may be accorded on account of being intended for use of one of the United States government departments, either directly or indirectly through a contractor with the United States government, where said shipments are consigned otherwise than in one of the following ways:

(a) To a government officer designated, not by the name of the individual, but by the title of his position as, for example, Supply Officer, Naval Inspector, or Constructing Quartermaster.

(b) To a government officer designated not by name but by title as above, followed by the words "For account of," and then followed by the name of the contractor or agent for the government engaged on the work at the point of destination.

(c) On some contracts the government has entered into an agreement designating certain parties as agent, or agents, for the government on that particular contract. Shipments for such parties shall be consigned to the particular department for which the work is being done, followed by the words "for account of," and then followed by the name of the agent as, for instance:

Ordnance Department
For account of du Pont
Engineering Co., Agent.
Penniman,
Williamsburg, Va.

or

Ordnance Department
For account of T. A. Gillespie,
Loading Co., Agents.
South Amboy, N. J.

(d) Shipments of material, equipment and supplies for any person repairing or building ships under the supervision of the United States Shipping Board Emergency Fleet Corporation, shall be consigned only to the United States Shipping Board Emergency Fleet Corporation, followed by the words "For account of" and then followed by the name and location of the particular concern performing the work, as for instance:

United States Shipping Board
Emergency Fleet Corporation
For account of American International
Shipbuilding Corporation,
Hog Island, Pa.

2. It is forbidden—

(a) In consigning a shipment to use the words "United States Government" or substantially that term, or abbreviations thereof, as the sole description of the consignee:

(b) Or to consign a shipment to and in the name of the United States government followed by words indicating that it is sent "care of" a private person, firm or corporation;

(c) Or to consign a shipment to a government official or to an officer of the army or navy by his name as an individual.

(d) Or to consign a shipment to a government official or to an officer of the army or navy followed by words indicating that it is sent "care of" a private person, firm or corporation.

3. No shipper or other person seeking or obtaining any privilege which may be accorded on account of the shipment being intended for the use of any one of the United States government departments, either directly or indirectly, through a contractor with the United States government, shall, without authority, use or cause to be used as consignee the name or title of the United States or of any department, bureau, agency, employee or officer thereof, or of the United States Shipping Board Emergency Fleet Corporation or of any officer, agent, employee thereof, or of any other person, or the designation "Emergency Fleet Corporation"; nor shall any shipper or other person offer or cause to be received for carriage, or transported, without authority, any such shipment consigned as specified in the foregoing paragraphs number 1 and 2, for the purpose of securing, by such consignment, any privilege which may be accorded on account of the shipment being intended for the use of any one of the United States government departments, either directly or indirectly through a contractor with the United States government.

Agents are forbidden to sign or issue bills of lading or receipts for shipments which in any manner conflict with any of the foregoing provisions.

(Violation of the foregoing order is punishable by fine of not more than $5,000 or by imprisonment for not more than two years or by both such fine and imprisonment.)

Order Regarding Payment of Freight Charges Modified

The Division of Public Service and Accounting announces in P. S. & A. Circular No. 20 that consideration has been given to several inquiries concerning the practical application of General Order No. 25, as affecting certain long established practices of the carriers and paragraph 5 of the order is amplified to read as follows:

Freight consigned to "order" or to "order notify" shall be delivered only upon surrender to the agent of the carrier of the original bills of lading for such freight, and the payment of the freight charges thereon as herein provided. Provided, however, if such a bill of lading be lost or delayed, the freight may be delivered in advance of surrender of the bill of lading upon receipt by the carrier's agent of a certified check, for an amount equal to 110 per cent of the invoice, or upon receipt of a surety bond either individual or corporate, acceptable to the treasurer of the carrier in an amount for twice the amount of the invoice. When conditions require it, a blanket bond may be accepted, but such blanket bond may only cover shipments received at one station on one railroad. If shippers desire to arrange for the delivery of their "order notify" shipments to consignees on shipper's written or telegraphic orders without the surrender of bills of lading, a blanket bond in satisfactory amount must be filed with the treasurer of the initial carrier, and reference to this bond must be shown on shipping orders. Initial carrier will notify all interested lines and show reference to bond on each waybill.

When shipments from foreign countries move on "order notify" bills of lading, delivery may be made to final consignee upon presentation of custom house certificate indicating deposit of endorsed bill of lading with the customs officer at port of entry, or upon presentation of customs permit indicating that consignee has filed bond with customs officer guaranteeing production of bill of lading.

Fruit and vegetables consigned to shipper on "straight bill of lading—original—not negotiable" shall be delivered only

upon surrender of consignor's written or telegraphic order for such freight to the agent of the delivering carrier, and the payment of freight and other charges. In such cases, a blanket bond, in satisfactory amount, indemnifying the railroads against the delivery of shipments on fraudulent orders, must be filed with the treasurer of the initial carrier, and reference to this bond must be shown on shipping orders. Initial carrier will notify all interested lines, and show reference to bond on each waybill.

Care should be exercised to differentiate between the forms of bonds required by the order. The bond applicable to freight charges, provided for by paragraph 2, is not available in compliance with the provisions of paragraph 5. To protect the carrier in the delivery of "order notify" shipments or straight consignments to be delivered on shipper's order, a separate form of bond must be executed; such form of bond has been approved by the Division of Law and is attached to the circular.

Express Franks Cancelled

Under instructions from Director General McAdoo the American Railway Express Company (the new company established under the contract between the director general and the four principal express companies of the country) has cancelled all express franks previously in use and adopted the policy of issuing no new franks.

In the past free service was given by the express companies to a large number of people, not only express officers and employees but also the officers of railroad companies and others. As a result of this practice a great many express franks were in existence and a large quantity of goods was carried free of charge.

After careful consideration, the director general decided that it was proper and wise to eliminate this free service entirely, and as a result all matter now carried by express is paid for.

Organization of Fuel Conservation Section

The Fuel Conservation Section of the Division of Operation, of which Eugene McAuliffe is manager and Major E. C. Schmidt assistant to the manager, has increased its organization by appointing Robert Collett assistant manager for the eastern region and also supervisors for each of the other regions as follows: Howard C. Woodbridge, supervisor, Allegheny Region; Harry Clewer, supervisor, Pocahontas Region; Bernard J. Feeney, supervisor, Southern Region; Frank P. Roesch, supervisor, Northwestern Region; Leslie R. Pyle, supervisor, Central Western Region, and J. W. Hardy, supervisor, Southwestern Region. The supervisors will give special attention to the conservation of fuel used on locomotives, in shops, at terminals, at water stations, and for all miscellaneous purposes. They will also give attention to the preparation of fuel received and to its quality; and they will make investigations and recommendations with respect to its transportation to and its handling at fuel stations.

Advertisements on Cars to Be Eliminated

The Car Service Section has issued a circular saying it is desirable that railroad refrigerator cars bearing the advertisements of brewing companies be repainted in accordance with the standards of the individual railroads and the advertisements eliminated. Roads are requested to advise how many of such cars they have and also of any other railroad refrigerator or other class cars they have that bear similar advertisements so that consideration can be given to repainting them.

Progress Report on Capital Expenditures

In order that the Railroad Administration may be kept informed of the progress being made on addition and betterment work authorized for the calendar year, the Division of Capital Expenditures, in D. C. E. Circular No. 9, requests the federal manager or general manager of each road to furnish a monthly report on D. C. E. Form 10 giving the progress for each project authorized when the estimated cost chargeable to capital account exceeds $25,000.

* * *

The office of the Board of Railroad Wages and Working Conditions has been removed from 718 Eighteenth street to Room 812, Southern Railway Building, Washington.

Orders of Regional Directors

AUTHORITY OF INDIVIDUAL RAILROAD OFFICERS.—The Southern regional director in circular letter No. 347 says: "While the regional traffic committees have duly advised all traffic officers that authority no longer vests in the individual railroad officer to change any freight rate or charge, passenger fare or charge, baggage charge, or rule, regulation or privilege which in any wise affects freight or passenger revenues, but that specific authority or instructions must be obtained in each and every instance, apparently this absolute requirement is not well understood by other than traffic officials. Attention has been drawn to an instance where a carrier advanced a yard limit board a sufficient distance to include an industry as within the switching limits of a city, thus affecting the freight charges that would otherwise apply to and from that industry." It is directed that operating and other officials concerned be made conversant with these requirements.

Corporation Data on Time Tables.—During the period of government control, according to circulars issued by the regional directors, the practice of showing names, titles and addresses of corporate officers in connection with time tables and other informative matter in the Official Guide will be discontinued and only the names, titles and addresses of the administration organization are to be included. However, if the various companies desire to have a showing of their corporate officers made, there is no objection to their doing so in a section of the guide set apart for that purpose with the understanding that the cost will be paid for by the companies.

Corporate Names to Be Submerged.—The names of the individual railroad companies are to be submerged as much as possible on all stationery and forms used in railroad operation under federal control in order to make them clearly subordinate to the names of the United States Railroad Administration, according to circulars issued by the regional directors. The instructions are to have stamped or printed, as may be found most economical, upon all existing stationery "in such manner as to make it clear that it is intended to eliminate the name of the corporation and yet maintain the identity of the property," a heading in the following form:

UNITED STATES RAILROAD ADMINISTRATION
W. G. McAdoo, Director General of Railroads
NORTH AND SOUTH RAILROAD

It is desired that all forms be immediately adapted to this change without incurring undue expense or failing to utilize any existing stationery and that the foregoing heading be so applied, if that be possible, that no suggestion will be conveyed that the channels of ordinary business procedure are being changed. It is declared to be important that routine business be not diverted through the administrative offices at Washington. The name of local officers, local office addresses, etc., are not to be eliminated.

This is to apply to envelopes, letterheads, payrolls, expense bills, vouchers, bills, and all forms of stationery upon

which communications are written or statements are made which carry a printed or stamped heading, or on which the name of the railroad company appears. Tickets and baggage checks are excepted, and are covered by special instructions. All new tariffs, circulars, notices, or announcements hereafter issued, and envelopes, letterheads and similar stationery henceforth provided, shall carry a heading of the character described above.

On account of the prospective changes in all accounting forms, as well as in bills of lading and other documents which when executed constitute contracts, it is not practicable at this time to issue final instructions as to the forms to be used. Therefore, until further advised, the use of existing forms will be continued with the modification above directed, but such forms shall not be reprinted in quantities estimated to be sufficient to last longer than six months from August 15, 1918. A reasonable supply of forms of contracts which produce a change in status which would in some cases continue beyond federal control, such as leases and side track contracts, may be retained unstamped, to provide for cases likely to arise within six months of August 15, 1918, in which the duration of the contract would be sufficient to possibly extend beyond federal control. This will provide forms for execution by the corporation with the consent of the federal manager in such cases.

By reason of the fact that bills of lading are distributed generally among shippers and frequently privately printed by the shippers, it is directed that notice should be given to all shippers and particularly those known to agents as using private forms of bills of lading, that on and after August 15, no bill of lading will be executed by the carrier, unless stamped or printed as directed above.

As to passenger tickets and baggage checks, the existing forms may be used. New standard forms will be authorized and when available will be used in replenishing stock.

It is stated that the required change can probably be most economically effected by transmitting stationery to central points, stamping or printing the same there and redistributing it. If it seems most economical to accomplish the change in the stock at small stations by the use of rubber stamps, it is suggested that stamps be forwarded from station to station on each division under the direction of the division officers, to avoid an unnecessary number of stamps. Arrangements are to be made to have the stamped stationery put in universal use by August 15, 1918.

Equipment for Grain Movement.—In Circular No. 44, dated July 25, the regional director of the Southwestern railroads states that reports reaching his office indicate a shortage of grain cars to protect the movement of grain in the Southwestern region and asks that every effort be made to increase the supply of grain cars by giving preferred attention to light repairs to equipment, by handling grain promptly from loading stations to destination, by unloading and releasing loaded cars promptly and returning them for further loading, and by loading equipment to its capacity.

Diversion Bureau for Fruit and Vegetables.—To provide facilities for the transmission of information to shippers and receivers and for handling the diversion or reconsignment of fruit and vegetables in transit on the Great Northern and the Northern Pacific from points west of Spokane, Wash., the regional director of Northwestern lines has created a reconsigning and diversion bureau at Chicago, with J. B. Crawford, formerly superintendent of transportation of the Pacific Fruit Express, in charge. Agencies have also been established in the offices of the Great Northern and the Northern Pacific at Spokane, Wash.; St. Paul, Minn.; Havre, Mont.; Laurel, Minot, N. D., and Mandan, to assist the bureau. Effective August 1, originating lines will instruct all billing agents promptly to mail copies of waybills covering all carloads of fruits and vegetables to the agency at Spokane. Eastbound trains having one or more cars of fruit or vegetables will be given a block number at Spokane. Telegraphic reports showing the contents of blocks will be sent from Spokane to the agency at St. Paul and to the bureau at Chicago and confirmation of these reports will be mailed from Spokane to the other agencies along the line. Telegraphic passing reports of blocks will be sent by the various agencies to the bureau at Chicago and to the Spokane agency, and also to the agency at St. Paul until the blocks pass through that city. All requests for diversions or reconsignments in transit will be handled entirely by the bureau at Chicago or its agencies at St. Paul or Spokane, and if done by either of the latter two agencies will be reported by mail to the Chicago bureau.

Fuel Conservation Meeting.—A meeting was held at Hotel Sherman, Chicago, on August 1, under the auspices of Eugene McAuliffe, manager of the fuel conservation section of the United States Railroad Administration, and of the United States Fuel Administration for the purpose of giving railroad officers and employees of the Northwestern regional district an opportunity to consider and discuss fuel economies. The meeting was attended by general managers, general superintendents, superintendents of motive power, purchasing agents, master mechanics, traveling engineers, superintendents, train masters and train despatchers who were selected by their respective roads as best qualified to represent their lines.

Galveston Demurrage Bureau Approved.—In Supplement No. 7 to Circular No. 65, dated July 25, the regional director of Northwestern railroads announces that through an oversight the name of the Galveston Demurrage and Storage Bureau was omitted from the list of demurrage bureaus and associations approved under General Order No. 6 of the director general.

Increasing Express Efficiency.—The regional director urges Northwestern railroads to give their utmost co-operation in making the service of the American Railway Express Company prompt, efficient and satisfactory. Among the points which Mr. Aishton wishes the lines under his jurisdiction to consider are: whether all express is being loaded currently on proper trains at important terminals and transfer points; whether trains are being held for the loading of express and what has been fixed as the maximum time for such detention; whether sufficient employees are provided by the express company for the expeditious handling of express matter; what study has been made of the situation, either independently or jointly, with the express representatives respecting this service, and particularly with a view of giving the express companies the maximum service with the minimum detention to trains, and whether certain trains have been designated to handle express business and if proper efforts are being made to confine express tonnage to those trains.

Coal Trestles.—The regional director of Central Western railroads suggests that a considerable saving in car days could be accomplished if all industries receiving coal in carload lots were required to provide themselves with facilities for utilizing drop bottom or dump equipment, and that where the amount of coal used is not sufficient to justify the construction of a high trestle satisfactory results could be secured with an elevation of two or three feet, or sufficient to hold one carload of coal. Central Western railroads are asked to investigate the possibility of introducing trestle facilities where they seem practical.

MILEAGE WORRIES GERMAN DEPUTIES.—Members of the Prussian Diet are incensed at the adjournment of the Diet until September 20, not because of the delay caused to the Prussian Reform bill, says a despatch to the New York *Times*, but because the question as to whether the members will obtain free railway tickets was not decided. As one paper says, this shows the seriousness of the desire for reforms.

Pacific and Mikado Type Locomotives for C. B. & Q.

Based on Previous Designs of the Same Types with Improved Details; Many Interchangeable Parts

DURING THE PAST few years four classes of locomotives for road service have been built by the Baldwin Locomotive Works for the Burlington System. These classes are as follows:

A Pacific type for passenger service, with 27-in. by 28-in. cylinders and 74-in. driving wheels, first built in 1915.*

A medium-weight Mikado, with 27-in. by 30-in. cylinders and 64-in. driving-wheels, first built in 1911.

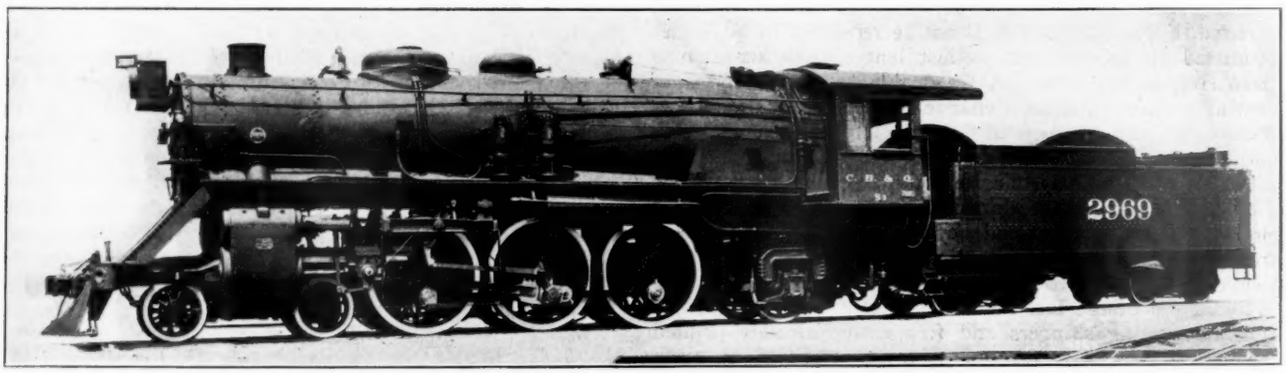
A heavy Mikado, with 28-in. by 32-in. cylinders and 64-in. driving wheels, first built in 1912.

A Santa Fe type, with 30-in. by 32-in. cylinders and 60-in. driving wheels, first built in 1912.

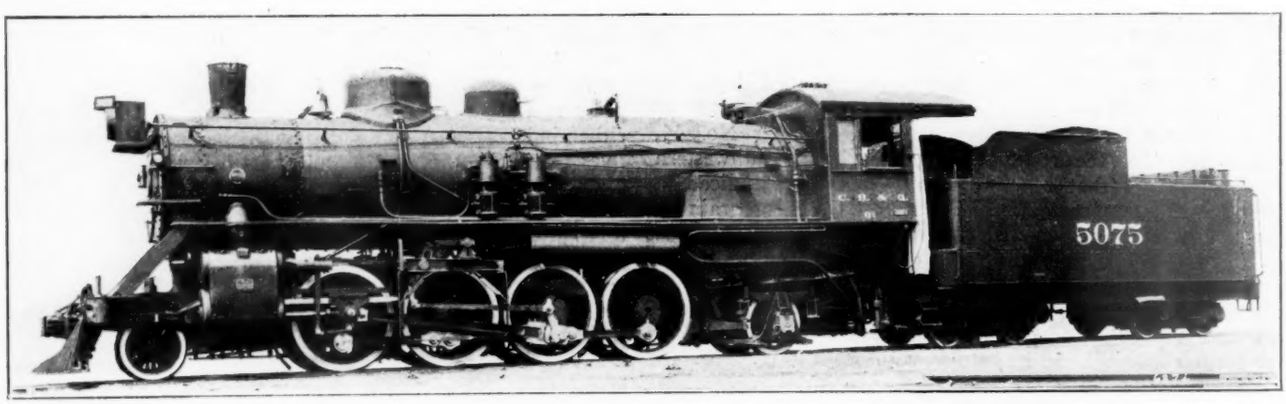
A careful study has been made of these four classes, with a view to improving details when placing successive orders. While the leading dimensions of each class have been retained, and no change has been made in the tractive effort developed, the designs have been thoroughly revised since the first locomotives were built. An order which includes all four classes is now being completed. Special interest centers in the Pacifics and the medium-weight Mikados, because of the extent to which interchangeable parts are used in these designs. A large number of details and fittings are interchangeable in all the locomotives, but the dimensions of the two types referred to are such that this policy can be carried out to an unusual degree. The Pacific type exerts a tractive effort of 42,200 lb. and the Mikado type 52,200 lb., the ratio of adhesion being slightly over 4 in each case.

The boilers are alike, except for a few changes in details incident to the different classes of service in which the locomotives are used. The superheaters are 34-unit, Type A. The barrel is built with three rings; the first ring is sloped on the top, and the third ring on the bottom. This provides a large steam space, and a free entry to the firebox throat. The main dome is placed on the middle ring; here the longitudinal seam is on the right-hand side, and a large inside liner covers the seam and re-enforces the shell under the dome opening. The auxiliary dome is on the third ring, and is placed over a 16-in. opening in the shell. The seam, which is on the top center, is welded throughout its length, and re-enforced by inside and outside welt strips. By removing the auxiliary dome the boiler can be entered without dismantling the throttle mechanism.

The firebox has a combustion chamber and the seams uniting this chamber with the crown and throat and those uniting the throat and side sheets are welded. A brick arch is installed, and is supported on angle irons studded to the side sheets. The grate rocking bars are held in rectangular frames, which are trunnioned so that they can be tilted through a wide angle when dumping the fire. The grate



Pacific Type Locomotive Developed on the C. B. & Q.



Burlington Mikado Type Having Many Details Interchangeable with the Pacific Type

*For a description of this locomotive, see the *Railway Age Gazette* for August 13, 1915, see page 277.

castings interchange on the two types of locomotives. The ash-pans of both types are of the double-hopper pattern with swing bottoms, and separate operating rigging for each hopper.

The cylinders of the Pacific and medium-weight Mikado type locomotives are cast from the same pattern. The steam chest heads are interchangeable, and the cylinder heads are similar, except that those of the Pacifics are recessed to a greater extent than those of the Mikados, to allow for two inches less piston stroke. There is a slight difference in the steam-chest bushings, the ports being so cut that on the passenger locomotives there is an exhaust clearance of ⅛-in., while the valves are line-and-line on the freight engines. No by-pass valves are used on these cylinders, but vacuum relief valves are tapped into the steam chests. The piston-valves are interchangeable, as are also the pistons and their rods, except for a slight difference in the length of the latter.

The piston heads are rolled steel, of light section, fitted with cast iron bull-rings which are shrunk on and further secured by electrically welded retaining rings. The piston rods are extended, and are of Nikrome steel, hollow bored. Interchangeable crossheads are used on the two types of locomotives. They are of the Laird pattern, with light bodies of .40 carbon steel and bronze shoes. The crosshead wrist pins are of Nikrome steel, hollow bored, and the same is true of all the crank-pins on the Pacific type and the main pins on the Mikado type. Nikrome steel is also used for the main and side rods, and for the stub straps of both types. The main rod stubs are alike on the two locomotives. All the driving axles are of chrome-vanadium steel, hollow bored.

A light design of Walschaert valve gear, with Ragonnet power reverse mechanism, is used on these locomotives, the valve gear pin bearings being fitted with case-hardened bushings. The power reverse cylinder on both classes is placed immediately back of the reverse shaft, so that a short reach-rod connection can be used.

The design of the machinery, as above described, is the result of careful study on the part of the railroad and the builders; and by the use of special materials and correct proportions the parts have been lightened and the dynamic augment on the rail materially reduced. Tests have shown a marked reduction in bridge stresses as a result of this policy. Light parts are also used on the heavy Mikado and Santa Fe type locomotives.

The main frames of the Pacific and medium-weight Mikado type locomotives are five inches wide and are cast of .40 carbon steel, annealed. The driving-boxes interchange on these two types, as do also the pedestal wedges. The shoes and wedges are of bronze. The Rushton design of trailing truck with outside journals and swing links of the three-point suspension pattern is used on the passenger locomotives. These links act as an effective stabilizer and no centering device is necessary. The Mikados are equipped with the Hodges trailing truck.

The cabs have been redesigned, and are considerably shorter than those used on the previous locomotives. This saves unnecessary weight and gives the enginemen a better view through the front cab windows. The steam turret is placed outside the cab, and the valves have extension handles. Each locomotive is equipped with a speed recorder which is driven from the rear truck axle.

The tenders of both types are similar in construction, and are equipped with coal pushers. The frames have 12-in. channels for the longitudinal sills, with oak front bumpers and back bumpers of built-up steel. Equalized pedestal trucks are used with the Pacific type locomotives, and arch-bar trucks with the Mikados. The wheels, in each case, are of forged and rolled steel.

The tables contain the principal dimensions of the two types:

General Data

	4-6-2	2-8-2
Gage	4 ft. 8½ in.	4 ft. 8½ in.
Service	Passenger	Freight
Fuel	Bit. coal	Bit. coal
Tractive effort	42,200 lb.	52,200 lb.
Weight in working order	269,200 lb.	278,600 lb.
Weight on drivers	171,300 lb.	211,300 lb.
Weight on leading truck	49,300 lb.	27,900 lb.
Weight on trailing truck	48,600 lb.	39,400 lb.
Weight of engine and tender in working order	433,000 lb.	472,000 lb.
Wheel base, driving	13 ft.	16 ft. 9 in.
Wheel base, total	33 ft. 8½ in.	33 ft. 9½ in.
Wheel base, engine and tender	68 ft. 4 in.	68 ft. 5 in.
Ratios		
Weight on drivers ÷ tractive effort	4.1	4.1
Total weight ÷ tractive effort	6.4	5.3
Tractive effort × diam. drivers ÷ equivalent heating surface*	695.3	743.9
Equivalent heating surface* ÷ grate area	76.5	76.5
Firebox heating surface ÷ equivalent heating surface,* per cent	6.5	6.5
Weight on drivers ÷ equivalent heating surface*	38.1	47.1
Total weight ÷ equivalent heating surface*	59.9	62.0
Volume both cylinders	18.6 cu. ft.	19.9 cu. ft.
Equivalent heating surface* ÷ vol. cylinders	242.0	225.9
Grate area ÷ vol. cylinders	3.2	3.0
Cylinders		
Kind	Simple	Simple
Diameter and stroke	27 in. by 28 in.	27 in. by 30 in.
Valves		
Kind	Piston	Piston
Diameter	14 in.	14 in.
Wheels		
Driving, diameter over tires	74 in.	64 in.
Driving, thickness of tires	4 in.	4 in.
Driving journals, main, diameter and length	11 in. by 12 in.	11 in. by 12 in.
Driving journals, others, diameter and length	10 in. by 12 in.	10 in. by 12 in.
Engine truck wheels, diameter	37¼ in.	37¼ in.
Engine truck, journals	6 in. by 12 in.	6 in. by 10 in.
Trailing truck wheels, diameter	48¼ in.	42¼ in.
Trailing truck, journals	8 in. by 14 in.	8 in. by 14 in.
Boiler		
Style	Wagon top	
Working pressure	180 lb. per sq. in.	
Outside diameter of first ring	78 in.	
Firebox, length and width	108⅛ in. by 78¼ in.	
Firebox plates, thickness	Sides, back and crown, ⅜ in.; tube, ⅝ in.	
Firebox, water space	Front, 6 in.; sides, 6 in. to 4 in.; back, 4 in.	
Tubes, number and outside diameter	200—2¼ in.	
Flues, number and outside diameter	34—5½ in.	
Tubes and flues, length	18 ft. 6 in.	
Heating surface, tubes and flues	3,072 sq. ft.	
Heating surface, firebox and combustion chamber	292 sq. ft.	
Heating surface, total	3,364 sq. ft.	
Superheater heating surface	751 sq. ft.	
Equivalent heating surface*	4,491 sq. ft.	
Grate area	58.7 sq. ft.	
Tender		
Tank	Water bottom	Water bottom
Frame	Channel	Channel
Weight	163,800 lb.	193,400 lb.
Wheels, diameter	36 in.	33 in.
Journals, diameter and length	5½ in. by 10 in.	6 in. by 11 in.
Water capacity	8,200 gal.	10,000 gal.
Coal capacity	13 tons	19 tons

* Equivalent heating surface = total evaporative heating surface + 1.5 times the superheating surface.

ENGLAND'S RAILWAY LABOR UNION.—The National Union of Railwaymen of England has a membership of 401,579.—*The Engineer, London.*

RAILROAD OFFICER IS PREMIER OF SIBERIA.—Lieutenant General Horvath, vice president and general manager of the Chinese Eastern Railway, having declared himself premier of a temporary Siberian Government, has been proclaimed provisional ruler of Siberia, according to press despatches from Harbin.

ENGLISH RAILWAY "RATIONS" TRAVEL.—In order to restrict Saturday passenger traffic from East Lancashire to Blackpool, Southport and other coast resorts of England, the Lancashire & Yorkshire Railway has decided that, from June 29, all tickets must be applied for in advance, as much as three days' notice being necessary in some towns. Tickets will be limited in number, according to the capacity of the trains, and will be available only by the trains for which they are timed.

French Railways During the War

A VERY INFORMING BULLETIN, under the above title, was issued by the Paris Chamber of Commerce in June, 1918. It will be read with keen interest by railway men in the United States, because of the points of similarity and of contrast between the French and the American railways during the war, which it brings out.

"The organization and management of railways during the war are regulated in France by the law passed December 28, 1888: According to Article 22 of this law, 'In time of war, the control of the railways is entirely in the hands of the military authorities'; and so it was on August 2, 1914, all railway officials, from an engineer to a porter, were mobilized, and ready at their respective posts. The large private companies and the board of directors of the Etat Railway, in whose hands the control of French railways is vested in times of peace, delegated their powers to the military authorities, merely reserving to themselves the technical supervision of the *personnel*. A special Commission was appointed, consisting of two members; an officer of high rank (the military Commissioner) and an influential representative of the Company (the technical Commissioner), to undertake collectively the general management of each different railway.

Their Military Rôle

"Ever since the outset of hostilities French railways have carried out, in an irreproachable manner, the important missions assigned to them at different times by the High Command, and the necessities of mobilization. On the Est Railway the transporting of troops and war material to the points of concentration was effected in a fortnight by 4,000 trains. Since then, notwithstanding the fact that part of the line has been occupied by the enemy, and some works destroyed in battles, or by bombardments, it is still open, and used for transport purposes, etc. The Nord Railway Line was able to save all the material hastily sent down southwards; 2,700 Belgian engines were brought back, while the armies fought heroically to stem the tide of German invasion, and hundreds of trains waited, till the last minute, in order to save the guns. Just before the battle of the Marne, the Nord Railway, uniting its efforts to those of the Est, enabled the different corps to be rapidly transferred from the extreme right to the extreme left of the army, and so ensure victory. On the Nord Railway Lines, which have been reduced from 3,840 kilometres to 1,976, as many as 114,000 military trains were run in 1915. Notwithstanding the fact that they are, comparatively speaking, situated at some distance from the war-zone, the other lines: Paris-Orléans, Paris-Lyon-Méditerranée, the Midi, and Etat Railways, have afforded equally valuable assistance during the period of mobilization; the three first provided for the transporting of men and munitions to the North, the last named, working in conjunction with the Nord Railway Line, ensured the transfer of troops from the West of France, also those of the British armies. Over these lines, considered as a whole, 17,000 train-loads of troops and 250 of siege artillery and ammunition were carried between August 5 and 26, in 1914.

"During the succeeding months, when the front was being extended towards the North Sea, 700,000 men were transported in more than 6,000 trains, over 228 kilometres of line. Later on, the rôle of the railways was changed by degrees according to the kind of operations in hand, though their importance was in no way lessened. They had to carry to the trenches in the North, into Italy, or to the ports available for supplying the armies at Salonika, re-inforcements, food stuffs and munitions—to bring back to the interior of the country civilian refugees, the wounded, repatriated persons and German prisoners; to transport Indian, colonial and American troops, and ensure a postal service, comprising millions of letters and parcels, with the armies. The necessities of national defence will not allow of our stating exactly to what extent their valiant self-sacrifice has been carried, how officials have fallen nobly at their posts and the splendid results obtained by close collaboration with our High Command at the battles of Verdun, in the Somme and Champagne, as well as at the time of the renewal of fighting in the open, on the Western front, and the stopping of the great German offensive in March, 1918. The French government, desiring to acknowledge the valuable assistance given by railway officials, has had a great number of them specially mentioned—and rewarded for distinguished service. It also wished to bring under their country's notice the splendid behavior of the *personnel* of the Nord and Est Railways and on the army lines; Mr. Clemenceau, the premier and minister of war, gave the reasons for such a step in the following terms: 'After having displayed from the very beginning of the war, the most splendid endurance and energy in the fulfillment of duties particularly hard, the *personnel* (of the above railway companies) gave during the recent military operations, and often under the most perilous circumstances, fresh proofs of a spirit of self-sacrifice, and of admirable devotion to their country.

From an Economic Point of View

"Heavy military traffic, however, only hindered for a short space of time passenger traffic; and the goods transport service has, up to the present, always been able to meet the requirements of civilians in a satisfactory manner. A statement of the returns of the big railway companies enables us to realize the extent of the revival in the economic life of our country. If we examine it since 1914, we see that, setting aside the decrease, at the beginning of hostilities, the receipts have gradually been on the increase, almost rising to, in the case of certain lines not directly connected with military operations, the amount of normal receipts, in spite of a reduction in the length of the lines and a shortage of rolling stock. The following table, showing in ***million of francs*** the large-railway companies' returns from 1913 up to 1917, goes to prove this fact.

Railways	1913	1914	1915	1916	1917
Nord	336	208	111	125	137
Est	305	196	114	133	134
Paris-Lyon-Méditerranée	596	455	462	523	531
Paris-Orléans	308	244	256	283	301
Midi	147	117	122	125	138
Etat	324	262	278	296	296

"It is as well to call attention to the fact that this rise—which is also noticeable during the same period with regard to receipts in connection with military affairs—does not prevent an important deficit, due to the enormous increase in the cost of running trains, resulting both from the rise in the price of coals, raw materials, labor, wear and tear of rolling-stock, and the continual higher salaries, pensions and indemnities. In order to remedy, in a certain degree, the difficult situation into which the prolongation of such a state of things would have inevitably placed the French railway companies, and following the example of all the belligerent countries, parliament, on March 31, 1918, voted a general increase of 25 per cent on all tariffs except for the army transport service and parcel-post rates. *This extra percentage is to be taken off at the end of the sixth year after the cessation of hostilities.*

"Apart from these general remarks on French railways as a whole, it is interesting to get some idea, gathered from official reports, of the work carried on by each railway company respectively.

"*Paris-Lyon-Méditerranée.*—From August 26, 1914, the P.-L.-M. Railway Co., while having to contend with the very considerable requirements of army transport, was able gradually to resume its goods traffic. Early in 1915 its ordinary traffic had increased 20 per cent compared to that of 1913. In 1917 the tonnage for goods had risen 32 per cent compared to what it was in 1913. The future will permit us to give fuller particulars as to how, in the autumn of 1917, the efforts of the company exceeded even those made in 1914, and how

by enabling large allied contingents to arrive speedily at a distant front, it merited the praise and gratitude of the country.

"*Paris-Orleans Railway.*—After having, during the first month of the war, run 3,500 military trains, besides facing the difficult task of re-victualling the entrenched camps around Paris, as well as the transporting of French and American troops, the Orléans Railway Co. has continually encouraged agricultural activity in the regions through which it runs, and repaired the wear caused to its rolling stock by giving large orders for this purpose. In 1917, its receipts amounted to 34 millions more than those of the preceding year, exceeding by about a 100 millions those of 1913. The gross tonnage per kilometre, for goods-traffic, rose to 16 milliards and a half tons (75 per cent more than in 1913).

"*The Midi Railway.*—The fertile regions of the South West of France having been specially called upon to convey large quantities of food stuffs for the re-victualling of the armies and the civilian population, the Midi railway has had more than any other line, to struggle against the shortage of rolling stock. The gross receipts for 1917 have nevertheless exceeded by 18 millions those of the preceding year, and by 14 millions those of 1913.

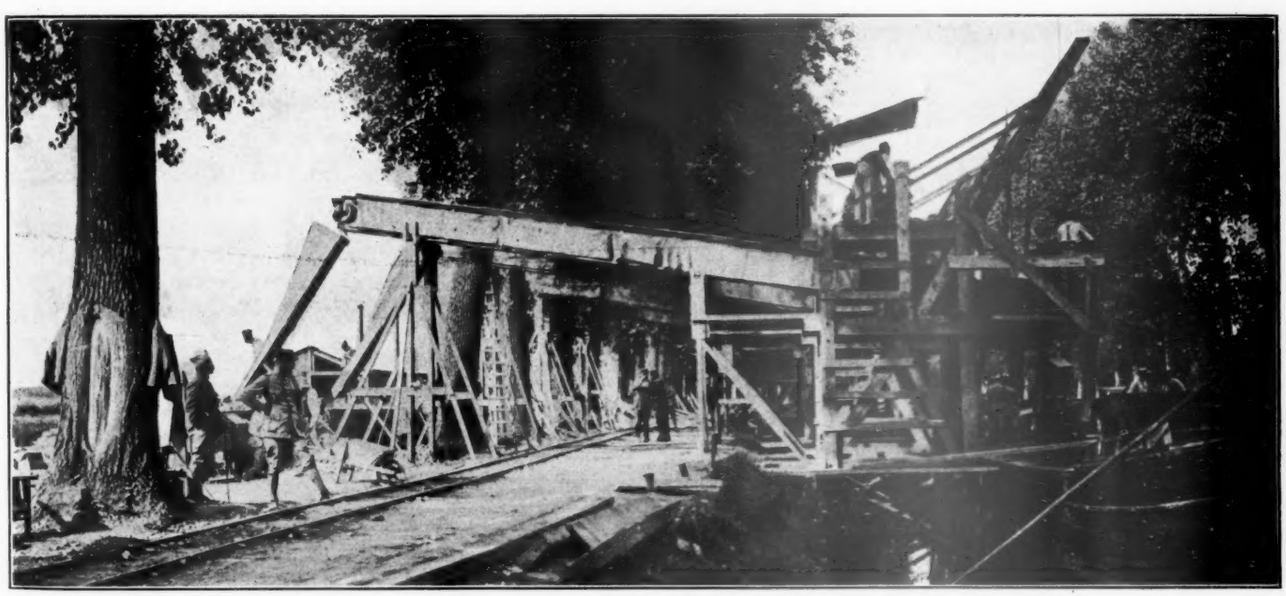
"*The Etat Railway.*—Owing to the extent of coast line it serves, the Etat Railway constitutes the principal means of transmission for raw material as well as for conveying munitions and overseas-troops. But the chief characteristic of its work during the war has been, above all, the considerable development made in connection with transactions for fuel, for the requirements of the civilian population, and this in accordance with a decree signed on December 4, 1914, conferring upon the company the rights of importation and sale. The Etat Railway is also intrusted with the financial side of the question of a relief fleet formed with the object of assuring certain transports connected with supplies for the Allies. It has, moreover, undertaken the running of a private fleet with a view to increasing the freight available for the transport of English coal. This undertaking as well as the military effort accomplished by it, to the same degree as by the other companies, deserves to be looked upon as a valuable factor in the renewal of the economic life of the country.

"*The Nord and Est Railways.*—Although the Nord and Est Railways are partly in invaded territory and, above all, used for purposes of national defence, it is a remarkable fact that, according to statistics, their commercial traffic is again regularly progressing, and is even on certain lines *proportionately* superior to what it is in times of peace.

"The above brief statements prove that the return of France to an economic *régime* almost approaching that of normal times is, for the most part, due to French railway companies which have also made it a point of honor to give all the help in their power with the national defence loans, either by their respective subscriptions or the repayment of coupons to shareholders. We must also mention the grants and allowances given as indemnities for the high cost of living to the companies' officials, both male and female. These grants, which were at first made by the government, are retroactively borne by the companies, from the time the rise in transport tariffs voted by parliament comes into force.

"Certainly, before the end of hostilities, so as to meet all military requirements, and after the conclusion of peace, to repair the damage done to the railways and assure their financial security in future, there will be many difficulties to contend with and overcome. But it will not be one of the least results of the war, if a solution is found to such an important question by creating between the different companies, interested in the matter, co-ordination of effort, and patriotic emulation eminently conducive to France's economic expansion, which is so closely associated with the prosperous condition of her railway systems."

To Improve Port of Paris.—A committee of the Municipal Council of Paris has submitted a report approving the issue of a credit for 50,000,000 francs ($9,650,000) with which to defray the expenses for improving the port of Paris. Two years ago Minister of Public Works Marcel Sembat announced that a project was under way for improving the traffic facilities between Paris and Havre. Railroad tracks and a barge canal were planned to relieve shipping congestion between Paris and the sea. It is probable that the above project is connected with the plan announced by Mr. Sembat.



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This New Arrangement Transfers 300 Tons Daily from Barges to Cars

General News Department

With mail weighing 175 lbs., Lieutenant Bonsal flew from Philadelphia to Belmont Park, New York, in 42 minutes on July 29. This is at the rate of about 120 miles an hour.

J. M. Hansen, president of the Standard Steel Car Company, has accepted appointment as a member of the General Executive Committee of the Railway Business Association.

The Western Union has pleaded "not guilty" in the suit brought against it charging violation of the statutes which forbid encroachment on the government's mail monopoly, by sending night letter telegrams by train.

No increase in the present rates of taxation on transportation is contemplated by the Ways and Means Committee of the House of Representatives now engaged in drafting the revenue bill intended to raise $8,000,000,000 in war taxes for next year.

The New York Sun, in a special dispatch from Washington, says that postmasters throughout the country are to be made fiscal agents and treasurers for local telephone and telegraph offices under plans tentatively decided on by the Post Office Department Committee on Telegraphs and Telephones.

Three special investigators representing the Division of Labor have been appointed by the Railroad Administration. These investigators are William Blackman, formerly connected with the Department of Labor; John A. Moffatt, formerly an officer of the Hatters' Union, and Anthony M. Danks, of the Division of Safety of the Interstate Commerce Commission.

Colonel T. S. Williams, president of the Brooklyn Rapid Transit, has announced that the wage increases which range from 10 to 25 per cent, which had been determined upon by the company, are to be put into effect August 2. This will add, it is estimated, $1,100,000 a year to the expenses of the company. Colonel Williams said that the principle on which the wages were advanced was that followed by the federal wage commission in recommending higher wages on steam railroads; namely, the consideration of the rising cost of living.

The Administrative Committee of Dining Car Superintendents has notified the Federal Food Administration that railroad dining car superintendents have been requested to no longer place sugar bowls on dining car tables, and it is understood that the same practice as that followed by hotels will be adopted, namely, of serving diners two half lumps or one teaspoonful of sugar only at each meal. This action was taken voluntarily by the dining car superintendents, the Food Administration having prescribed no method of serving sugar on dining cars.

The Kansas City-Florida Special, a St. Louis-San Francisco passenger train operating between Kansas City, Mo., and Jacksonville, Fla., was derailed near Fickinger, Ark., on July 18. The cause of the derailment has not yet been determined. The locomotive left the rails on the curve and was followed by the baggage car, smoking car and two coaches which turned over, while the sleeping cars remained on the track. The engineman, fireman and two passengers were killed and about forty passengers were injured. Most of the injuries, however, were slight.

The National Research Council, acting as the Department of Science and Research of the Council of National Defense, has appointed a committee to investigate the fatigue phenomena of metals. H. F. Moore, professor of the engineering experiment station of the University of Illinois, is chairman. The committee is charged with the responsibility of developing a knowledge of the strength and durability of metals subjected to repeated stresses, such as ship structures, crank shafts of aircraft engines, and heavy ordnance. According to present plans the experimentation required will be done in the laboratories of the University of Illinois under the personal direction of Professor Moore.

The Inland Waterways Committee has made a report to the Railroad Administration favoring the appointment of an administrator for the Chesapeake & Delaware Canal. The plan suggested does not necessitate the actual taking over of the property by the government, but the administrator would be given power to put on new boats or barges and to control operation of the canal with a view to giving relief to railroad congestion. This report was made public by J. Hampton Moore, Representative from Pennsylvania, in the absence of Director-General McAdoo.

A military railroad seven miles long, connecting Camp Humphreys, Va., with the Richmond, Fredericksburg & Potomac, has just been completed by engineer troops in training at the camp, who will also operate the trains. The work on this railroad, which is standard gage, was started during the winter by the 102nd Engineers, and the first train over the line, carrying a large number of men bound for Washington, was run on Saturday, July 27. No regular passenger service will be operated, but the road will perform a useful service in the transportation of supplies for the camp.

The Interboro subways, New York City, are to be reorganized so as to provide two through north and south lines, in Manhattan, on August 1, according to an announcement made by the State Public Service Commission. The east side line will be designated as the Lexington avenue line; it will extend by the present line from the southern terminus in Brooklyn, northward to the Grand Central terminal, 42nd street, thence by Lexington avenue to the Harlem river, and thence to 167th street, where it merges into the Jerome avenue (elevated) line. A branch to Pelham Bay Park is still unfinished. The west side line will be called the Seventh avenue line. This consists of the present subway from the northern termini southward to Times Square, at Broadway and Seventh avenue, and thence southward through Seventh avenue and Varick and other streets to South Ferry, with a branch through Park Place eastward to Brooklyn. This branch is in operation only as far as William and Wall streets. That part of the present subway from the Grand Central Terminal, at Fourth avenue and 42nd street, westward to Times Square, will be operated by shuttle trains connecting the east side and west side lines. Both of the through lines—the Lexington Avenue and the Seventh Avenue—are four-track throughout the section of heaviest traffic, about six miles in length. With the elevated lines Manhattan now has 17 tracks above or below surface between "down town" and Harlem.

Safety Work Pays on the North Western

The accident statistics of the Chicago & North Western show a marked decrease in the number killed and injured on that road in the 7½ years ending December 31, 1917, as compared with the 7½ years which terminated on June 30, 1910, before the "safety first" committees were organized. The statistical comparison is as follows:

315	fewer	employees	killed, a decrease of 38.9	per cent.
16,443	fewer	employees	injured, a decrease of 25.2	per cent.
7	fewer	passengers	killed, a decrease of 8.8	per cent.
1,454	fewer	passengers	injured, a decrease of 20.8	per cent.
337	fewer	outsiders	killed, a decrease of 19.0	per cent.
169	fewer	outsiders	injured, a decrease of 3.7	per cent.

Safety work was commenced on the North Western in May, 1910, and there are now over 900 men serving on division, local, shop, terminal and central safety committees. Records kept for the 5½ years ending December 31, 1917, indicate that

the overwhelming majority of accidents are due to carelessness and are preventable. During that time 292 deaths to employees, or 87.16 per cent, were due to dangerous and thoughtless practices; 20, or 5.97 per cent, were caused by collisions and derailments: 20, or 5.97 per cent, by defective engines, cars, track, tools, machinery, etc.; and 3, or 0.90 per cent, were unavoidable. Of the cases of injuries to employees, 30,537, or 86.11 per cent, were the result of dangerous practices; 579, or 1.63 per cent, were due to collisions and derailments; 1,680, or 4.74 per cent, were caused by defective engines, cars, track, tools, machinery, etc., and 2,668, or 7.52 per cent, were unavoidable. In the years 1912 to 1917 inclusive, safety first committees on the North Western made 27,082 recommendations which were adopted by the road and only 1,201 which were rejected as impractical.

Railway Signal Association

The annual meeting of the Railway Signal Association is to be held on September 19 and 20 at the Hotel McAlpin, Broadway and Thirty-fourth street, New York City. French Lick Springs was originally selected as the place for the meeting, but owing to war conditions and the omission of the June stated (New York) meeting, it was considered desirable to cancel the arrangements for French Lick Springs and to hold the meeting in New York. The sessions will be called at 9 a. m. and close at 6 p. m., with an intermission for lunch.

Changes in the Master Car Builders Interchange and Loading Rules

The executive committee of the Master Car Builders' Association has recently issued Circular No. 6 supplementing the 1917 loading rules. This circular contains modifications of rules 17, 56, 57 and 59 and also the following new rules: Rule 88 covering the manner of loading metal plates in gondola cars. Rule 112-C on loading wrought iron pipe 12 in. or less on flat cars. Rule 117-B on the manner of securing concrete culvert pipe loaded on flat cars and Rule 125 on the manner of loading metal sheets in box cars.

Circular No. 9 announces the extension of the date effective of paragraphs d, f, h, and i of Rule No. 3 to October 1, 1920, and the elimination of paragraph k of Rule 3, effective July 15, 1918.

The executive committee has also issued the following circular relating to the defect carding of cars offered in interchange: "The M. C. B. Rules in reference to defect carding of cars in interchange are modified as follows: (a) Defect carding for any delivering line defects, as between government controlled roads for defects on cars belonging to non-government controlled roads and private car lines as well as cars belonging to government controlled roads is discontinued. (b) Defect carding for any delivering line defects on cars belonging to non-government controlled roads and private car lines is limited to the first and last government controlled road receiving or delivering the car."

The French Railway Used by the American Forces

A letter recently received by the editor from Dalton W. McCarthy, a member of the Light Railways and Roads contingent of the American Expeditionary Forces in France, was accompanied by a most interesting, illustrated pamphlet, entitled "America's Way to the War in France." This booklet, which is published in English, describes the Paris-Orleans Railroad, over which most of the American troops travel on their way to the front. This company operates 4,869 miles of lines which connect the ports of Brest, St. Nazaire, Nantes and Bordeaux with Paris. The main artery of the system, and the most important from the standpoint of traffic, is the line which connects Paris with Bordeaux, the great port at the mouth of the Garonne. This line passes through Tours, Poitiers, and Angouleme. This is also part of the route from Paris to the western Pyrenees, the Basque coast (including the well-known resorts of Arachon and Biarritz), Spain and Portugal. Another line cuts through central France from North to South, passing through Vierzon, Issoudun, Chateauroux, Limoges and Cahors, to Toulouse, where it connects with lines which lead to the central and eastern Pyrenees and the western Mediterranean coasts of France and Spain. An additional north-and-south line traverses the industrial region of which the centers are Bourges and the Montlucon, climbs into the mountains of Auvergne, and reaches the cities of Clermont-Ferrand and Aurillac, besides the spas of Royat, Mont-Dore, LaBourboule, Saint-Nectair and Vic-sur-Cere. These main lines are interlaced by a series of transversal lines running east and west.

The booklet includes a brief history of the railroad and a description of the cities and departments through which it operates, amplified by photographs of points of interest. Brief reference is also made to the important part taken by this railroad in assisting in the mobilization at the outbreak of war. During the first days of the mobilizaton, between August 2 and 5, 1914, it put on about 1,500 troop trains; between August 5 and 19, it moved nearly 600,000 officers and soldiers belonging to the metropolitan corps and the colonials of Algeria, Senegal and Morocco; the 144,000 horses, 40,000 carts and cannons, and 64,000 tons of material and provisions. During 1916, the railway carried 9,500,000 officers and men on personal journeys, while the number of carloads of troops, horses, war material and provisions of all kinds carried was 1,063,630. A few months after the outbreak of war, moreover, the company transformed its shops into munition factories where it has turned out more than two million shells of various calibres.

Routing Freight in the West

Frank B. Townsend, formerly vice-president in charge of traffic of the Minneapolis & St. Louis, and now on the staff of the regional director of Northwestern railroads, delivered an address before the Traffic Club of Chicago on July 23, on the subject of "Routing Freight in the Western Territory." He described in detail the operating economies which have been achieved through close supervision of the routing of freight in the West. The results attained in this direction were covered in an article in the *Railway Age* of July 12, page 57. Mr. Townsend's address contained some more recent statistics than were contained in this article which indicate that the rerouting plan is operating with more and more success as time goes on. For instance, between May 25 and July 15 there was rerouted at Minnesota Transfer, Minn., a total of 2,723 carloads, which resulted in a saving of 326,682 loaded car miles, or an average reduction in the haul of 120 miles per car.

Mr. Townsend also outlined the new classification of routes which governs the movement of traffic out of the Chicago switching district. They are as follows :

(a) *Preferred Routes:* This will include the short routes and all the direct routes via which the mileage does not exceed 115 per cent of the short route. The distance from Chicago to destination will be shown, and if, for any reason, the short route should not be used in preference, it will be carried as a "Second Preferred Route," or as an "Emergency Route."

(b) *Second Preferred Route:* This will include all direct routes via which the mileage is not in excess of 125 per cent of the short route, and joint routes over two or more lines via which the mileage does not exceed 115 per cent of the mileage via the short route.

(c) *Emergency Routes:* This will include recognized routes which have been used in the past and via which the mileage is in excess of 125 per cent of the short direct line route, and will also include routes via two or more lines via which the mileage is in excess of 115 per cent of the short direct line route.

Mr. Townsend also congratulated shippers for the co-operation which they have given the railroads in increasing car efficiency by loading equipment to capacity. Railroad Administration statistics for the four months of January to April show the average tons per loaded car to be 26.4 tons for 1918, as against 23.7 tons for 1917, or an increase of 2.7 tons per car, or 11.4 per cent. This means that for every 100 cars required in the first four months of the year 1917 to move the traffic of the country, only 89 cars were required for the first four months of this year to move the same amount of tonnage. Many individual shippers have shown much greater increases in the average loading per car, but the figures are based on reports for 94 per cent of the total operated mileage of the class one railroads in the United States, and includes all carload and less-than-carload traffic.

Traffic News

The so-called Victory Special, which is being operated under the auspices of the New York State Food Commission and the Home Economics Department of Cornell University, is now making a trip over the Delaware & Hudson. Demonstration of the uses of wheat substitutes and the conservation of foods is being made for the benefit of women along the line.

The car service section, for the purpose of reducing accumulations of shipments caused by embargoes, has directed the roads to prepare and forward promptly a complete statement of cars now held, refused by connections on account of embargoes. On receipt of this information it is the intention to handle with a view to authorizing the acceptance of such cars as may properly be forwarded to destination at this time.

Porters at the Grand Central Terminal

Miles Bronson, terminal manager of the New York Central Grand Central terminal in New York, says that all "red cap" porters of draft age have been laid off, but have been offered employment in the baggage rooms or on the cleaning forces. Under normal conditions the porters at the Grand Central number about 165. Seventy of these have been laid off and about 95 have been retained. This force of porters serves 391 trains which are handled in and out daily of the Grand Central Terminal, and it is estimated that about 75,000 to 80,000 people use the terminal daily.

These porters have been paid from $22.50 to $45 a month, but under the new wage schedule they will receive an increase of wages of $20 a month.

Philadelphia-New York Commutation

The Railroad Administration has fixed a commutation rate of $31.86 between New York and Philadelphia. This commutation ticket, good for one month, will allow the purchaser to make 54 one way rides within the calendar month. The purchaser will be required to provide a photograph of himself to be attached to the ticket and stamped for purposes of identification. Tickets were placed on sale on July 31, both for use over the Pennsylvania and over the Central of New Jersey Reading route. The tickets, however, are not interchangeable and must be used only over the route for which they were purchased. The present one-way fare between New York and Philadelphia is $2.20, with eight per cent added for war tax, making $2.38. If all of the 54 rides were used in the month, the cost per ride on the commutation ticket would be 59 cents.

Coal Production

Production of bituminous coal during the week of July 20, while not equivalent to the record week of July 13, was higher than any previous week, according to the report of the Geological Survey. The output during the week ended July 20, including lignite coal and coal made into coke, is estimated at 12,950,000 net tons as against 13,273,000 net tons during the week preceding or a decrease of 2.4 per cent, and as against 11,230,000 during the current week of 1917, or an increase of 15.3 per cent. The average production per working day during the week of July 20 is estimated at 2,159,000 net tons as against 2,212,000 net tons during the week previous and 1,872,000 net tons during the week of July 20, 1917.

Anthracite shipments during the week ended July 20, declined 1,755 carloads, or 4.2 per cent, compared with the week preceding, the total movements amounting to 40,664 carloads.

The percentage of full time output lost on account of car shortage during the week ending July 13 was only 3.9 per cent.

Commission and Court News

Interstate Commerce Commission

The commission has dismissed the complaint of the Northwestern Traffic and Service Bureau against rates on coal in carloads from Manitowoc, Wis., to St. Paul and Minneapolis.

The commission has awarded reparation to the Macey Company for charges for trap car service from their plant to the Pere Marquette freight station at Grand Rapids, and has fixed a price not to exceed three dollars for this service.

The commission has dismissed a complaint of John P. Wilson, claiming that by demanding the payment of under charges on a carload of peaches after the net proceeds from the sale thereof had been remitted to the consignor while rendering correct bills to other commission merchants prior to the remitting of such proceeds, the Pennsylvania Railroad discriminated against the complainant.

Court News

Permits for Liquor Shipments

The Supreme Court of the State of Washington holds that under the statute of 1915, p. 12, § 17, providing that druggists desiring to ship intoxicating liquors into the state shall first secure a permit therefor which shall be void 30 days from the date of issue, a permit granted to a druggist was absolutely void after 30 days, and the liquor was contraband, although the permit was good when the shipment started.—State v. Great Northern (Wash.), 172 Pac., 546. Decided April 26, 1918.

Discriminatory Switching Charges

Switching being a terminal service that is rendered only in connection with certain parts of the traffic, and which may not be required, and being a service separate and distinct from transportation service, the Colorado Supreme Court holds that a carrier has no right to fix a rate that includes switching charges regardless of whether switching services are rendered.—Consumers' League v. Colorado & Southern, (Colo.), 172 Pac. 1064. Decided May 6, 1918.

Limitation of Liability—Warehouseman's Authority

The Colorado Supreme Court holds that a warehouseman, authorized to ship goods in the owner's name, has the authority to make a statement as to the value of the goods. The state statute providing that nothing therein shall deprive any holder of a bill of lading of any remedy or right of action under the existing law, did not preserve the common-law right of recovery of actual value of goods lost, where bill of lading contained a clause limiting liability.—D. & R. G. v. Teufel (Colo.), 172 Pac. 1060. Decided May 6, 1918.

Loss of Oil from Tank Car

A consignee of cotton seed oil furnished tank cars for the shipment, and it was not apparent that the inner valve in a car had not been closed. In an action against the railroad, the Circuit Court of Appeals, Fifth Circuit, held that the railroad could not be held liable for loss of the oil resulting from failure to securely close the valve, notwithstanding the outer cap might have prevented the escape, had it not been defective; it appearing that cars were often used without fastening the outer cap.—Alabama & Vicksburg, 249 Fed., 308. Decided February 4, 1918.

The same court holds that where a seller of cotton seed oil loaded it in its own tank car, the buyer cannot, having paid the draft accompanying the bill of lading, recover against the carrier for loss of oil resulting from a defect in the car not discoverable by reasonable inspection, even though the railroad made the seller, who was required by contract to deliver the oil, an allowance for the use of the car.—Alabama Great Southern v. Morris & Co., 249 Fed., 312. Decided February 4, 1918.

Equipment and Supplies

Government Car and Locomotive Orders

The United States Government has given an additional order for 500 Consolidation type locomotives to the Baldwin Locomotive Works, for service on the military railway lines in France.

The Railroad Administration's order for 15 additional locomotives from the Lima Locomotive Corporation, reported in these columns last week, is for light Mikado locomotives.

It is understood that orders for 10,000 cars for the use of General Pershing's forces will be distributed as follows: American Car & Foundry Company, 2,400; Standard Steel Car Company, 1,900; Haskell & Barker, 1,800; Pressed Steel Car Company, 1,500; The Pullman Company, 1,500; Standard Car Construction Company, 400 tank cars; Liberty Car Company, 250; St. Louis Car Company, 250; all but the 400 tank cars are box cars and gondolas.

Iron and Steel

THE KANSAS CITY SOUTHERN has ordered 203 tons of miscellaneous steel from the Kansas City Structural Steel Company.

THE LAKE SHORE & MICHIGAN SOUTHERN has ordered from the Vierling Steel Company 145 tons of structural steel for an extension to its Chicago freight car repair shop.

Track Specialties

THE ANN ARBOR is inquiring for about 3,000 tons of 85-lb. rails.

THE BALTIMORE & OHIO has placed an order with a Pittsburgh concern for 1,000 kegs of spikes.

THE PITTSBURGH & WEST VIRGINIA has placed an order with a Pittsburgh concern for 500 kegs of spikes.

Signaling

THE NASHVILLE, CHATTANOOGA & ST. LOUIS has awarded a contract to the Union Switch & Signal Company for the installation of an electro mechanical interlocking plant at Stones River, Tenn. A Saxby & Farmer mechanical machine will be installed, having 19 working levers and 13 spare spaces in a 32 lever frame. The electric unit will be the "S-7" type, having 16 working levers and 16 spare spaces in a 32 lever frame.

BEWARE OF LIBERTY BOND SWINDLERS.—A warning to the public against Liberty bond swindlers is given in a poster to be sent out for wide distribution by the Chamber of Commerce of the United States. Publication of the warning was prompted by reports that bondholders in many parts of the country had been approached by persons offering to trade for the bonds stocks of doubtful value. In most instances the bondholders have been told that the stocks offered in exchange for bonds are absolutely safe and that they will pay far greater returns than do the Liberty bonds.

YOU ARE DOING IT.—Every time you read, you purchasers of Liberty Bonds and War Savings Stamps, of what the United States is doing in France in building wharves and railroads, or deluging the Germans with gas or shelling them out of position with big guns or shrapnel, or of bombing their arsenals or cities, or of the great work of our Army and our Navy, or of the building of ships here, or of any or all of the great or small achievements of America, here or abroad or on the seas, you buyers of Liberty Bonds and War Savings Stamps truthfully can say, "I had a hand in this"; "I contributed to this"; "I am helping do this"; "It is part my work."

Supply Trade News

J. A. Simpson, editor of the Rock Island Lines Employes' Magazine, has resigned to become secretary of the Dooley-Brennan Advertising Company, Chicago.

William V. Dee, until recently secretary and general sales manager of the G. Drouvé Company, Bridgeport, Conn., has severed his active connections with this company.

F. H. Charbono, who for many years has represented the Independent Peumatic Tool Company in the East, with headquarters at New York, has been appointed manager of the Southern district, with headquarters at Birmingham, Ala., to succeed **George C. Wilson,** who has resigned to look after his interests in the North.

George H. Musgrave was appointed general manager of the Star Brass Manufacturing Company, Boston, Mass., on July 1. Mr. Musgrave has been with this company for more than 30 years, having left the service of the New York & New England Railroad to go to the Star Brass Manufacturing Company. In 1900 he was appointed general sales agent, specializing on railway, marine and naval steam devices.

The Aspromet Company, Pittsburg, Pa., manufacturers of asbestos-protected metal for use in building construction, announces that this company opened an office in the Munsey building, Washington, D. C., on August 1. This office is in charge of **O. O. Robinson,** district manager, and will also be under the personal supervision of **H. E. Marks,** general sales manager of the company.

A. G. Delany, salesman for the American Brake Shoe & Foundry Company, with headquarters at Chicago, has been appointed local manager of that company, at Minneapolis, Minn., where he will have charge of its work, and will also look after sales in northwestern territory. Mr. Delany was born at Worcester, N. Y., in 1879. In 1896, he entered the service of the Chicago, Burlington & Quincy as an office boy; later he served for a period of seven years in the Burlington locomotive shops at Chicago, and at Aurora, Ill., following which he was appointed mechanical traveling inspector for the same road, having charge of the heating and lighting of passenger cars of both the east and west lines. In 1905, he resigned to become salesman for the Safety Car Heating & Lighting Company, at Chicago, where he remained for three years, following which he went with the Chicago Car Heating Company, as salesman, with headquarters at Atlanta, Ga. In 1911, he left that company to become salesman for the American Brake Shoe & Foundry Company, at Chicago, which position he held until his recent appointment as local manager of the same concern at Minneapolis, as mentioned above.

A. G. Delany

HONORS FOR ENGLISH RAILWAYMEN.—Thirty-two per cent, or 30,052, of the staff employed by the London & North Western immediately prior to the war have left the company for active service. The casualties at the end of June numbered 10,513. Military awards have been made to 459 employees of the company who have distinguished themselves serving with the forces.

ANNUAL REPORT

Southern Pacific Company—Thirty-fourth Annual Report

REPORT OF THE BOARD OF DIRECTORS.

NEW YORK, July 11, 1918.

TO THE STOCKHOLDERS OF THE SOUTHERN PACIFIC COMPANY:

Your Board of Directors submits this report of the operations of the Southern Pacific Company and of its Proprietary Companies for the fiscal year ended December 31, 1917.

PROPERTIES AND MILEAGE.

The transportation lines constituting the Southern Pacific System, December 31, 1917, were as follows:

DIVISIONS.	FIRST MAIN TRACK.	ADDITIONAL MAIN TRACK.	SIDINGS.	FERRIES.	WATER LINES.
A.—MILEAGE OF LINES BELONGING TO OR LEASED BY COMPANIES THE CAPITAL STOCKS OF WHICH ARE PRINCIPALLY OWNED BY THE SOUTHERN PACIFIC COMPANY.					
(1)—Operated by the Southern Pacific Company upnder leases:					
Central Pacific Ry.	2,267.06	256.23	908.79	9.90	125
Oregon & California R. R.	1,214.36	7.56	281.60	....	...
Southern Pacific R. R.	3,530.13	208.29	1,583.86	3.00	...
South Pacific Coast Ry.	106.70	20.46	50.16	3.00	...
(2)—Operated by the owning Companies:					
Morgan's Louisiana & Texas R. R. & S. S. Co.	400.67	58.35	232.68	3.00	...
Louisiana Western R. R.	207.74	....	83.10	....	...
Lake Charles & Northern R. R.	72.66	....	12.38	....	...
Texas & New Orleans R. R.	468.14	6.02	215.49	....	...
Galveston, Harrisburg & San Antonio Ry.	1,360.95	6.59	371.01	....	...
Houston, East & West Texas Ry.	190.94	....	58.16	....	...
Houston & Shreveport R. R.	40.72	.69	7.20	....	...
Houston & Texas Central R. R.	948.51	9.04	263.09	....	...
Southern Pacific Terminal Company	.....	....	25.68	....	...
Arizona Eastern R. R.	377.774	....	75.36	....	...
Southern Pacific Company	.....	....	.....	....	4,400
B.—MILEAGE OF LINES BELONGING TO COMPANIES THE CAPITAL STOCKS OF WHICH ARE PRINCIPALLY OWNED BY THE MORGAN'S LOUISIANA & TEXAS R. R. & S. S. CO., BUT WHICH ARE OPERATED BY THE OWNING COMPANIES.					
Iberia & Vermilion R. R.	21.44	....	11.02	....	...
Total	11,207.76	573.23	4,179.58	18.90	4,525
Less operated jointly by Proprietary Companies	43.41	12.53	29.84	....	...
Total miles of road operated December 31, 1917	*11,164.35	560.70	4,149.74	18.90	4,525
Total miles of road operated December 31, 1916	11,095.91	560.76	4,030.35	18.90	4,525
Increase	68.44	....	†19.39	....	...
Decrease	.....	.06	.....	....	...
Average miles of road operated during the year	*11,136.84	560.73	.....	....	...

*Includes 2.48 miles owned jointly with other companies, 4.87 miles leased from other companies, and 187.65 miles operated under trackage rights; and excludes 32.61 miles of owned lines leased to other companies.

In addition to the mileage above tabulated, the Southern Pacific Company solely controls through ownership of capital stock, 780.48 miles of electric lines, and 1,240.52 miles of the Southern Pacific R. R. Co. of Mexico; and jointly controls (through ownership of capital stock in equal proportions with the Atchison, Topeka & Santa Fe Ry. Co.) 507.30 miles of the Northwestern Pacific Railroad, and 59.66 miles of the Sunset Railway, A GRAND TOTAL OF 13,752.31 MILES.

As of midnight December 31, 1916, the Central Pacific Railway Company and the Southern Pacific Railroad Company acquired the railways of the following companies:

	From	To	Total Miles Projected.	Miles Completed and in operation.
CENTRAL PACIFIC RAILWAY COMPANY:				
Lincoln Northern Railway.	Lincoln, Cal...	Dairy Farm		
SOUTHERN PACIFIC RAILROAD COMPANY:		Mine, Cal....	11.20	.....
Coast Line Railway	Santa Cruz, Cal.	Davenport, Cal.	11.90	11.90
Colusa & Hamilton Railroad	Harrington, Cal.	Hamilton, Cal..	61.23	46.66
Hanford & Summit Lake Railway	Ingle, Cal.....	Hardwick, Cal. .	42.41	42.41
Mojave & Bakersfield Railroad	Mojave, Cal...	Bakersfield, Cal.	85.00	.....
Oroville & Nelson Railroad.	Oroville, Cal...	Nelson, Cal.....	13.00	.....
Total			224.74	100.97

OPERATING INCOME.

The gross operating revenues of $193,971,489.54 exceeded the earnings of the previous year by $30,544,066.52 and are the largest in the history of the Company.

Revenue from passenger business increased $8,267,746.42, or 22.28 per cent., as a result of the transportation of troops and the industrial activity stimulated by the war, the revenue from these sources having more than counterbalanced the falling off in tourist travel and the acute competition of automobiles.

Revenues from mail and express increased $669,489.61, or 10.01 per cent., which is attributable to an increase of $1,249,579.12 in the revenue from express business, resulting from increased volume, reduced by a decrease of $580,089.51 in the revenue derived from the transportation of mail as a result of the new basis of compensation imposed upon the carrier by the United States Government.

Revenue from freight traffic increased $20,147,640.30, or 17.92 per cent.

Agricultural Products yielded an increase of $4,277,978, which was chiefly derived from barley, fruits and vegetables, and from rice, which has passed from the experimental stage of a few years ago to that of a staple crop of California.

Forest Products contributed an increase of $2,349,020, which is largely attributable to the construction of wooden vessels and the development of army cantonments, accompanied by curtailment of vessel transportation.

Manufactured Products yielded an increase of $6,439,342, distributed among many important commodities.

Products of the Mines produced an increase of $5,033,871, which consisted chiefly of revenue from fuel oil, coal, sulphur ore and bullion.

The continued suspension of steamship service through the Panama Canal by the diversion of ships to Transatlantic service, and the impetus to the country's industries which has resulted from the war, have enabled your rail lines to obtain an extraordinary volume of traffic which has employed your facilities to an unusual extent and permitted such economy of operation as to offset the great increases in the cost of labor, material and supplies.

Following the declaration of war, several of the vessels of your Company's coastwise fleet were impressed by the War and Navy Departments, and under an order issued by the United States Shipping Board, effective October 15, 1917, as to all vessels leaving home ports on or subsequent to that date, all of the Company's steamships were impressed. During the remainder of the year such of the steamships as were not in the service of the War and Navy Departments were operated by the Company on their regular runs by request of the United States Government for its account. The revenues and expenses accruing from the Government operation of the steamers are, therefore, excluded from the railroad operating income. The rental received or due from the Government is included in Non-operating Income under the heading "Hire of Equipment."

The increase of $30,544,066.52, or 18.69 per cent., in railway operating revenues was accompanied by an increase of only $17,513,086.30, or 16.99 per cent., in railway operating expenses, notwithstanding the effect of the high cost of fuel and all materials, and increases in wage schedules, as follows:

Increased prices paid for fuel	$6,190,000
Increased prices paid for other materials	3,690,000
Increased wages due to the Adamson Law	1,711,000
Other increases in wages	3,369,000
Total	$14,960,000

Excluding the effect of these higher uncontrollable costs, operating expenses show an increase of $2,553,000 only, or an expenditure of but 8.4 cents for each additional dollar of operating revenue.

OPERATING INCOME.

Expenditures for maintenance of way, structures and equipment increased $154,366.86, or 0.37 per cent.; and for transportation and other expenses, $17,358,719.44, or 28.24 per cent. Notwithstanding shortage of labor and difficulty in obtaining delivery of rails and other material because of war requirements, the roadbed, structures and equipment have been maintained at high standards of safety and efficiency during the year. The annual maintenance of way inspection made late in the year showed about as high a rating as in 1916. The percentage of locomotives in good order was the same for both years; and, despite the heavy calls upon freight cars to move traffic, 1918 was entered with only 4.6 per cent. of them in bad order, a percentage which is below normal.

Ton miles of revenue freight far exceeded any previous year, being 24.49 per cent. greater than in 1916, and 78.58 per cent. greater than in 1915. These large increases were successfully and economically handled with existing facilities through increased operating efficiency, as evidenced by the following:

1. Average car load was 2,534 tons, an increase of 1.71 tons or 7.24 per cent. over 1916, and of 3.72 tons, or 17.30 per cent., over 1915.

2. Average freight train load was 602.98 tons, an increase of 49.39 tons, or 8.92 per cent., over 1916, and of 120.89 tons, or 25.08 per cent., over 1915. The saving through heavier train load was equivalent to the operation of 2,190,462 freight train miles, compared with 1916., and 6,156,433 freight train miles, compared with 1915. Four trains in 1917 moved the same tonnage as five trains in 1915.

3. Daily mileage per freight car was 43.30, an increase of 4.15 miles, or 10.60 per cent., over 1916, and of 13.15 miles, or 43.61 per cent., over 1915. The ton mileage of revenue freight moved per *freight car on the line* increased 79.62 per cent. over 1915, five cars in 1917 performing as much service as nine cars in 1915. This increased service was equivalent to adding 40,000 cars to our equipment, which at present prices would cost about $100,000,000.

4. The ton mileage of revenue freight moved per locomotive increased 22.77 per cent. over 1916, and 75.41 per cent. over 1915, four locomotives in 1917 performing as much work as seven locomotives in 1915. This increased work was equivalent to the addition of 765 freight locomotives, which at present prices would cost $38,250,000.

5. Improved use of locomotive fuel saved $205,435.72 over 1916, and $478,319.96 over 1915.

From 1913 to 1917, inclusive, gross ton miles per pound of fuel increased in passenger service from 4.60 to 5.10, or 10.87 per cent., and in freight service from 5.01 to 6.11, or 21.96 per cent. The better use of fuel in 1917 compared with 1913 was equivalent to a saving of $3,409,264.

Of the net revenue of $73,369,666.72 from railway operations, railway tax accruals consumed $13,792,176.17, or 18.80 per cent.; and of each dollar of *increase* in net revenue over 42 cents went for *increased* taxes. The total increase in taxes was $5,522,883.89, or 66.79 per cent., of which $4,361,882.12 allocates to war income and excess profits taxes, $735,649.75

to Federal income and capital stock taxes, and $425,352.02 to State and county taxes.

Substantially all of the Miscellaneous Operating Income (line No. 26) represents the operating results of the California Fuel Oil Department of Southern Pacific Company during the eight months following April 30, 1917, when it was taken over by Southern Pacific Company from Kern Trading & Oil Company. The practice, that prevailed during the existence of the Kern Trading & Oil Company, of charging the field market price of its produced oil to railroad operations, has been continued, and the earnings resulting from the difference between the field market price and the cost of production has reached the treasury as net revenue from these operations, instead of in the shape of a dividend of the Kern Trading & Oil Company.

NONOPERATING INCOME.

In the foregoing statement of Income there has been excluded both from Income from Funded Securities (line No. 35), and from Interest on Funded Debt (line No. 47), for this year and last, the interest paid and received on bonds of the Proprietary Companies owned by Southern Pacific Company and its Proprietary Companies.

NONOPERATING INCOME.

The income for the year from Hire of Equipment—Balance (line No. 28) *exceeded* the payments to other companies for hire of equipment by $2,604,342.35, and the deductions from gross income (line No. 42) *decreased* $527,669.97. This is an *increase* in income compared with last year of $3,132,012.32.

The increase of $163,544.62 in Joint facility Rent Income (line No. 29) is due, principally, to a debit adjustment made in this account last year in establishing a reserve for the replacement of certain terminal facilities.

The decrease of $100,247.69 in Miscellaneous Rent Income (line No. 31) is due, principally, to the inclusion in this account last year of rental on property which has since been sold, and to certain adjustments in the account this year.

The increase of $20,960.34 in Separately Operated Properties—Profit (line No. 33) is the result of including in this account this year, in accordance with regulations of the Interstate Commerce Commission, certain items which were included last year in Miscellaneous Income.

The decrease in Dividend Income (line No. 34) is due, principally, to the fact that last year's income included a dividend of $2,100,000 received

INCOME ACCOUNT.

SOUTHERN PACIFIC COMPANY AND PROPRIETARY COMPANIES, COMBINED.
(Excluding offsetting accounts.)

		This Year.	Last Year.	+ Increase. — Decrease.	Per Cent.
	OPERATING INCOME.				
	RAILWAY OPERATING REVENUES.				
1.	Freight	$132,608,207.37	$112,460,567.07	+ $20,147,640.30	17.92
2.	Passenger	45,380,193.02	37,112,446.60	+ 8,267,746.42	22.28
3.	Mail and express	7,358,576.01	6,689,086.40	+ 669,489.61	10.01
4.	All other transportation	3,443,374.36	2,884,099.33	+ 559,275.03	19.39
5.	Incidental	5,119,897.68	4,250,538.51	+ 869,359.17	20.45
6.	Joint facility—Credit	91,957.19	58,534.52	+ 33,422.67	57.10
7.	Joint facility—Debit	*30,716.09*	*27,849.41*	— 2,866.68	10.29
8.	Total railway operating revenues	$193,971,489.54	$163,427,423.02	+ $30,544,066.52	18.69
	RAILWAY OPERATING EXPENSES.				
9.	Maintenance of way and structures	$17,522,352.09	$18,049,584.78	— $527,232.69	2.92
10.	Maintenance of equipment	24,261,506.62	23,579,907.07	+ 681,599.55	2.89
11.	Total maintenance	$41,783,858.71	$41,629,491.85	+ $154,366.86	.37
12.	Traffic	$3,131,416.72	$3,105,898.74	+ $25,517.98	.82
13.	Transportation	68,778,430.47	52,388,289.60	+ 16,390,141.47	31.29
14.	Miscellaneous operations	2,729,401.64	2,232,869.04	+ 496,532.60	22.24
15.	General	4,584,981.92	4,146,810.30	+ 438,171.62	10.57
16.	Transportation for investment—Credit	*406,266.64*	*414,622.41*	+ 8,355.77	2.02
17.	Total railway operating expenses	$120,601,822.82	$103,088,736.52	+ $17,513,086.30	16.99
18.	Net revenue from railway operations	$73,369,666.72	$60,338,686.50	+ $13,030,980.22	21.60
19.	RAILWAY TAX ACCRUALS	$13,792,176.17	$8,269,292.28	+ $5,522,893.89	66.79
20.	UNCOLLECTIBLE RAILWAY REVENUES	70,237.57	61,194.54	+ 9,043.03	14.78
21.	Railway operating income	$59,507,252.98	$52,008,199.68	+ $7,499,053.30	14.42
22.	REVENUES FROM MISCELLANEOUS OPERATIONS	$12,798,435.07	.....	+ $12,798,435.07	.....
23.	EXPENSES OF MISCELLANEOUS OPERATIONS	7,127,017.02	.....	+ $7,127,017.02	.....
24.	Net revenue from miscellaneous operations	$5,671,418.05	.....	+ $5,671,418.05	.....
25.	TAXES OF MISCELLANEOUS OPERATING PROPERTY	$99,860.02	.....	+ $99,860.02	.....
26.	Miscellaneous operating income	$5,571,558.03	.....	+ $5,571,558.03	.....
27.	Total operating income	$65,078,811.01	$52,008,199.68	+ $13,070,611.33	25.13
	NONOPERATING INCOME.				
28.	Hire of equipment—Balance	$2,604,342.35	.....	+ $2,604,342.35	.....
29.	Joint facility rent income	474,447.08	$310,902.46	+ 163,544.62	52.60
30.	Income from lease of road	29,149.86	19,964.61	+ 9,185.25	46.01
31.	Miscellaneous rent income	421,114.42	521,362.11	— 100,247.69	19.23
32.	Miscellaneous nonoperating physical property	263,375.18	275,217.69	— 11,842.51	4.30
33.	Separately operated properties—Profit	20,960.34	.....	+ 20,960.34	.....
34.	Dividend income	2,388,650.65	4,384,005.32	— 1,995,354.67	45.51
35.	Income from funded securities—Bonds and notes—Affiliated and other companies	2,188,594.29	3,803,189.92	— 1,614,595.63	42.45
36.	Income from funded securities—Investment advances—Affiliated companies	542,138.18	1,056,047.38	— 513,909.20	48.66
37.	Income from unfunded securities and accounts	1,045,011.18	667,083.30	+ 377,927.88	56.65
38.	Income from sinking and other reserve funds	687,322.39	672,738.84	+ 14,583.55	2.17
39.	Miscellaneous income	112,926.88	**74,395.27*	+ 187,322.15	.....
40.	Total nonoperating income	$10,778,032.80	$11,636,116.36	— $858,083.56	7.37
41.	Gross income	$75,856,843.81	$63,644,316.04	+ $12,212,527.77	19.19
	DEDUCTIONS FROM GROSS INCOME.				
42.	Hire of equipment—Balance	.....	$527,669.97	— $527,669.97	.....
43.	Joint facility rents	$332,837.13	354,144.21	— 21,307.08	6.02
44.	Rent for leased roads	168,315.91	700,750.37	— 532,434.46	75.98
45.	Miscellaneous rents	519,068.06	656,604.79	— 137,536.73	20.95
46.	Miscellaneous tax accruals	630,176.48	899,227.03	— 269,050.55	29.92
47.	Interest on funded debt—Bonds and notes	24,219,075.12	24,278,863.52	— 59,788.40	.25
48.	Interest on funded debt—Nonnegotiable debt to affiliated companies	284,996.66	311,290.85	— 26,294.19	8.45
49.	Interest on unfunded debt	34,279.10	26,135.87	+ 8,143.23	31.16
50.	Amortization of discount on funded debt	217,216.81	223,366.00	— 6,149.19	2.75
51.	Maintenance of investment organization	138,737.17	113,977.11	+ 24,760.06	21.72
52.	Miscellaneous income charges	182,724.49	129,772.36	+ 52,952.13	40.80
53.	Total deductions from gross income	$26,727,426.93	$28,221,802.08	— $1,494,375.15	5.30
54.	Net income	$49,129,416.88	$35,422,513.96	+ $13,706,902.92	38.70
	DISPOSITION OF NET INCOME.				
55.	Income applied to sinking and other reserve funds	$978,096.81	$957,186.08	+ $20,910.73	2.18
56.	Income balance transferred to credit of Profit and Loss	$48,151,320.07	$34,465,327.88	+ $13,685,992.19	39.71
57.	Per cent of net income on outstanding capital stock of Southern Pacific Company	17.65	12.63	+ 5.02	39.75

*Debit.

from the Kern Trading & Oil Company, the property of which was purchased this year by the Southern Pacific Company.

The decrease in Income from Funded Securities—Bonds and Notes (line No. 35) is the result, principally, of excluding from the income account this year the interest on Pacific Electric Railway Company bonds, which was not earned.

The decrease of $513,909.20 in Income from Funded Securities—Investment Advances—Affiliated Companies (line No. 36) is the result, principally, of reductions during the year in the indebtedness of affiliated companies to Southern Pacific Company.

The increase of $377,927.88 in Income from Unfunded Securities and Accounts (line No. 37) is due, principally, to interest received on larger balances this year, and to interest received on surplus funds invested during the year in U. S. A. Certificates of Indebtedness.

The increase in Miscellaneous Income (line No. 39) is due, principally, to the inclusion in last year's figures of certain debit adjustments on account of changes in classification.

DEDUCTIONS FROM GROSS INCOME.

The decrease of $532,434.46 in Rent for Leased Roads (line No. 44) is the result principally, of including in said account last year $425,949.36 paid to the Inter-California Ry. Co., Phoenix & Eastern R. R. Co., Porterville Northeastern Ry. Co., and Tucson & Nogales R. R. Co., which companies are this year dealt with as Proprietary Companies, and of including in said account last year $25,000 paid to the Beaverton & Willsburg R. R. Co., the property of which was purchased by the Southern Pacific Company on July 1, 1916, and $92,639.93 paid to the Coast Line Ry. Co., and Hanford & Summit Lake R. R. Co., the properties of which were purchased by the Southern Pacific Railroad Company as of midnight December 31, 1916.

The decrease of $137,536.73 in Miscellaneous Rents (line No. 45) is due, principally to the fact that following the taking over of the Company's steamships by the Government, hereinbefore mentioned, the rental for piers at New York, New Orleans, and Galveston was charged to the account of the Government.

The decrease of $269,050.55 in Miscellaneous Tax Accruals (line No. 46) is the result, principally, of including this year in Railway Tax Accruals, in accordance with ruling of the Interstate Commerce Commission, certain taxes which last year were included in this account.

The decrease of $59,788.40 in Interest on Funded Debt—Bonds and Notes (line No. 47) is the result, principally, of the acquisition by the Southern Pacific Company since December 20, 1915, of approximately $24,727,000 par value, of bonds issued under Central Pacific Railway Company Four Per Cent. Thirty-Five Year European Loan of 1911, the interest on which has been excluded in the foregoing income statement, both from Interest on Funded Debt (line No. 47) and Income from Funded Securities (line No. 35); and of including this year a full year's interest charge on Southern Pacific Company Equipment Trust Certificates—Series D, issued in May, 1916.

The increase of $24,760.06 in Maintenance of Investment Organization (line No. 51) is due, principally, to the payment during the year of legal expenses in connection with the suit over the Oregon & California Railroad's land grant.

The increase of $52,952.13 in Miscellaneous Income Charges (line No. 52) is on account of an increased amount of taxes paid on tax exempt bonds, and to an increased amount of taxes paid the French Government on bonds issued under Central Pacific Railway Company Four Per Cent. Thirty-Five Year European Loan of 1911.

On December 31, 1917, the principal of advances to the Southern Pacific Railroad Company of Mexico amounted to $40,617,228.66. Interest accruing on these advances has not been taken into the income of the Southern Pacific Company.

CAPITAL STOCK.

The capital stock of the Southern Pacific Company outstanding at the beginning of the year amounted to		$272,822,905.64
Issued during the year:		
Common stock issued in exchange for a like amount of Five Per Cent. Twenty-Year Convertible Gold Bonds surrendered and cancelled		500.00
Amount of Southern Pacific Company stock outstanding December 31, 1917		$272,823,405.64
The common and preferred capital stocks of Proprietary Companies outstanding at the beginning of the year amounted to		$343,834,900.00
Add:		
Capital stocks of following companies not heretofore dealt with as "Proprietary Companies":		
Inter-California Railway Co.	$2,500,000.00	
Phoenix & Eastern Railroad Co.	2,381,500.00	
Porterville Northeastern Railway Co.	300,000.00	
Tucson & Nogales Railroad Co.	66,000.00	
		5,247,500.00
Total capital stock of Proprietary Companies outstanding December 31, 1917		$349,082,400.00
Stocks of Proprietary Companies outstanding December 31, 1917, were held as follows:		
In hands of public		$81,700.00
Owned by Southern Pacific Company	$348,700,700.00	
Owned by Morgan's Louisiana & Texas Railroad & Steamship Company	300,000.00	
		349,000,700.00
		$349,082,400.00

FUNDED DEBT.

The funded debt and other fixed interest bearing debt of the Southern Pacific Company and of its Proprietary Companies, outstanding December 31, 1916, was as follows:

Southern Pacific Company	$209,482,110.00
Proprietary Companies	453,597,429.24
Total outstanding December 31, 1916	$663,079,539.24

Add:

First Mortgage Six Per Cent. Bonds of the Coast Line Ry. Co., the property of which was purchased by the Southern Pacific Railroad Company as of midnight December 31, 1916, subject to the mortgage indebtedness	$700,000.00	
Funded debt of the following companies not heretofore dealt with as Proprietary Companies:		
Inter-California Railway Company	$850,000.00	
Phoenix & Eastern Railroad Company	2,851,810.64	
Porterville Northeastern Railway Company	300,000.00	
	4,001,810.64	
		4,701,810.64
		$667,781,349.88

Purchased or retired during the year:

SOUTHERN PACIFIC COMPANY.		
Four Per Cent. Gold Bonds (Central Pacific Stock Collateral):		
Purchased from general funds and held in the treasury	$118,000.00	
Four Per Cent. Twenty-Year Convertible Gold Bonds:		
Purchased from general funds and held in the treasury	679,000.00	
San Francisco Terminal First Mortgage Four Per Cent. Bonds:		
Purchased from general funds and held in the treasury	$37,000.00	
Purchased from payments to sinking fund and cancelled	5,000.00	
	42,000.00	
Five Per Cent. Twenty-Year Convertible Gold Bonds:		
Purchased from general funds and held in the treasury	$144,000.00	
Retired in exchange for a like amount of common stock	500.00	
	144,500.00	
Equipment Trust Certificates:		
Series A, Due March 1, 1917, paid off	$1,012,000.00	
Series B, Due September 1, 1917, paid off	201,000.00	
Series C, Due December 1, 1917, paid off	117,000.00	
Series D, Due May 1, 1917, paid off	511,000.00	
	1,841,000.00	
CENTRAL PACIFIC RAILWAY COMPANY:		
First Refunding Mortgage Four Per Cent. Bonds:		
Purchased from payments to sinking fund	$28,000.00	
Three and One-Half Per Cent. Mortgage Gold Bonds:		
Purchased from proceeds of sale of lands	978,500.00	
Purchased from payments to sinking fund	31,000.00	
Central Pacific Railroad, California & Oregon Division Five Per Cent. Bonds:		
Series A, Due January 1, 1918	448,000.00	
Series B, Due January 1, 1918	41,000.00	
	1,526,500.00	
HOUSTON & TEXAS CENTRAL RAILROAD COMPANY.		
First Mortgage Five Per Cent. Bonds:		
Purchased from proceeds of sale of lands	28,000.00	
OREGON & CALIFORNIA RAILROAD COMPANY.		
First Mortgage Five Per Cent. Bonds:		
Purchased from payments to sinking fund	30,000.00	
SOUTH PACIFIC COAST RAILWAY COMPANY.		
First Mortgage Four Per Cent. Bonds:		
Purchased from payments to sinking fund	225,000.00	
SOUTHERN PACIFIC RAILROAD COMPANY.		
First Refunding Mortgage Four Per Cent. Gold Bonds:		
Purchased from payments to sinking fund	13,000.00	
TEXAS & NEW ORLEANS RAILROAD COMPANY.		
Payment to State of Texas on account of School Fund Debt	5,088.55	
Total purchased or retired during the year		$4,652,088.55
Amount of funded and other fixed interest bearing debt of the Southern Pacific Company and of its Proprietary Companies, outstanding December 31, 1917		$663,129,261.33
The outstanding securities are held as follows:		
In the hands of the public		$553,968,670.66
Owned by Southern Pacific Company	$94,947,590.67	
Owned by Proprietary Companies	2,742,000.00	
Held in sinking funds of Proprietary Companies	11,471,000.00	
		109,160,590.67
Total		$663,129,261.33

ROAD AND EQUIPMENT

Two ocean-going freight steamers, the El Almirante and the El Capitan, of 10,350 tons displacement, each, and the ocean-going tank steamer, Torres, of 11,110 tons displacement, were added to your Company's fleet during the year.

To replace equipment vacated and to provide for increased requirements, your Company placed orders during the year for 57 locomotives, 41 passenger-train cars, and 718 freight-train cars, for delivery in 1918; and is building at Company's shops 56 locomotives, and 3,808 freight-train cars. The cost of this rolling stock will be about $16,650,000.

LIBERTY LOAN.

To enable the employes of your Company and of its affiliated companies to subscribe for Liberty Loan bonds, they were permitted to subscribe through the Company for an amount of such bonds not exceeding twenty-five per cent. of their yearly salaries, the Company advancing the subscription price of the bonds and charging interest on such advances at the bond rate, the amounts so advanced to be repaid to the Company by monthly salary deductions. The following statement shows the bonds of

each issue subscribed for on behalf of employes and on behalf of the Company:

	First Loan	Second Loan	Third Loan
Total number of employes subscribing	19,973	19,078	64,129
Per cent, of employes subscribing to total employes	27%	27%	81%
Total amount subscribed for on behalf of employes	$1,918,800	$1,843,700	$5,019,400

	First Loan	Second Loan	Third Loan
Amount subscribed for on behalf of the Company*.....	5,000,000	5,000,000	2,000,000
Total subscriptions of employes and Company	$6,918,800	$6,843,700	$7,019,400

*Of the amounts subscribed there were allotted to the Company $850,000 of First Loan bonds, $4,018,750 of Second Loan bonds, and $2,000,000 of Third Loan bonds.

ASSETS AND LIABILITIES.

SOUTHERN PACIFIC COMPANY AND PROPRIETARY COMPANIES, COMBINED.

ASSETS—DECEMBER 31, 1917, COMPARED WITH DECEMBER 31, 1916, EXCLUDING OFFSETTING ACCOUNTS.

ASSETS.	DECEMBER, 31, 1917.	DECEMBER, 31, 1916.	INCREASE OR DECREASE.
INVESTMENTS			
Investment in road and equipment	$982,028,004.54	$951,830,440.37	$30,197,564.17
Improvements on leased railway property	1,454,270.66	1,374,680.53	79,590.13
Sinking funds	13,711,547.27	12,770,189.37	941,357.90
Deposits in lieu of mortgaged property sold	916.88	955.10	—38.22
Miscellaneous physical property*	30,778,341.24	14,059,122.02	16,719,219.22
Investments in affiliated companies:			
Stocks	273,313,261.65	279,006,951.48	—5,693,689.83
Bonds	142,156,382.61	147,085,896.95	—4,929,514.34
Stocks } Cost inseparable	12,192,301.70	9,722,584.96	2,469,716.74
Bonds }			
Notes	567,571.43	489,000.00	78,571.43
Advances	95,331,020.65	91,247,066.60	4,083,954.05
Other investments:			
Stocks	158,971.29	254,426.96	—95,455.67
Bonds	14,466,777.00	10,316,420.34	4,150,356.66
Notes	7,217,023.61	7,165,695.53	51,328.08
Advances	2,574,142.57	331,748.06	2,242,394.51
Miscellaneous	313,124.25	260,191.22	52,933.03
Total	$1,576,263,657.35	$1,525,915,369.49	$50,348,287.86
CURRENT ASSETS.			
Cash	$11,733,162.61	$12,114,650.52	—$381,487.91
Demand loans and deposits	4,500,000.00	8,000,000.00	—3,500,000.00
Time drafts and deposits	15,500,000.00	6,850,000.00	8,650,000.00
Special deposits	87,728.17	1,791,406.30	—1,703,678.13
Loans and bills receivable	4,050,388.38	185,775.49	3,864,612.89
Traffic and car-service balances receivable	1,997,112.74	1,004,641.46	992,471.28
Net balance receivable from agents and conductors	7,499,834.43	3,936,975.36	3,562,859.07
Miscellaneous accounts receivable	9,174,317.16	6,840,733.89	2,333,583.27
Material and supplies	24,406,115.91	16,217,750.13	8,188,365.78
Interest and dividends receivable	2,590,309.52	3,145,845.50	—555,535.98
Rents receivable	1,845,219.51	27,039.58	1,818,179.93
Other current assets	74,639.29	36,517.38	38,121.91
Total	$83,458,827.72	$60,151,335.61	$23,307,492.11
DEFERRED ASSETS.			
Working fund advances	$103,434.45	$67,315.42	$36,119.03
Other deferred assets	4,017,883.74	6,332,479.39	—2,314,595.55
Total	$4,121,318.19	$6,399,794.71	—$2,278,476.52
UNADJUSTED DEBITS.			
Rents and insurance premiums paid in advance	$135,618.35	$118,648.56	$16,969.79
Discount on capital stock	5,959,083.45	3,678,600.00	2,280,483.45
Discount on funded debt	3,682,526.87	3,827,969.63	—145,442.76
Other unadjusted debits	11,454,127.36	6,883,827.27	4,570,300.09
Securities issued or assumed—unpledged †‡	5,720,675.00	4,432,175.00	1,288,500.00
Securities issued or assumed—pledged †‡	713,000.00	713,000.00	.....
Total	$21,231,356.03	$14,509,045.46	$6,722,310.57
Total assets	$1,685,075,159.29	$1,606,975,545.27	$78,099,614.02

*The value of the unsold Central Pacific Railway Company and Oregon & California Railroad Company land grant lands is not included in the statement of the assets above (see remarks concerning the Oregon & California Railroad Company lands). †Excluded from total assets in accordance with regulations of Interstate Commerce Commission.

SOUTHERN PACIFIC COMPANY AND PROPRIETARY COMPANIES, COMBINED.

LIABILITIES—DECEMBER 31, 1917, COMPARED WITH DECEMBER 31, 1916, EXCLUDING OFFSETTING ACCOUNTS.

LIABILITIES.	DECEMBER 31, 1917.	DECEMBER 31, 1916.	INCREASE OR DECREASE.
STOCK.			
Capital stock of Southern Pacific Company	$272,823,405.64	$272,822,905.64	$500.00
Capital stock of Proprietary Companies*	349,082,400.00	343,834,900.00	5,247,500.00
Total	$621,905,805.64	$616,657,805.64	$5,248,000.00
LONG TERM DEBT.			
Funded debt of Southern Pacific Company	$211,665,610.00	$213,512,110.00	—$1,846,500.00
Funded debt of Proprietary Companies*	457,897,326.33	454,712,604.24	3,184,722.00
Book liability	$669,562,936.33	$668,224,714.24	$1,338,222.09
Less held by or for company	6,433,675.00	5,145,175.00	1,288,500.00
Actually outstanding	$663,129,261.33	$663,079,539.24	$49,722.09
Nonnegotiable debt to affiliated companies:			
Open accounts	2,829,872.25	11,222,155.49	—$8,392,283.24
Total	$665,959,133.58	$674,301,694.73	—$8,342,561.15
CURRENT LIABILITIES.			
Traffic and car-service balances payable	$2,661,701.70	$1,766,018.92	$895,682.78
Audited accounts and wages payable	12,353,426.61	10,354,631.02	1,998,795.59
Miscellaneous accounts payable	3,272,524.87	946,555.68	2,325,969.19
Interest matured unpaid	5,520,303.01	4,856,967.74	663,335.27
Dividends matured unpaid	4,159,051.49	4,145,057.89	13,993.60
Funded debt matured unpaid	512,213.92	23,213.92	489,000.00
Unmatured interest accrued	5,464,404.36	5,482,893.42	—18,489.06
Unmatured rents accrued	247,802.70	13,789.76	234,012.94
Other current liabilties	672,379.48	602,148.06	70,231.42
Total	$34,863,808.14	$28,191,276.41	$6,672,531.73
DEFERRED LIABILITIES.			
Other deferred liabilities	$135,222.20	$102,103.18	$33,119.02
UNADJUSTED CREDITS.			
Tax liability	$7,639,524.97	$1,692,093.23	$5,947,431.74
Insurance and casualty reserves	3,158,472.00	1,695,586.67	1,462,885.33
Accrued depreciation—Road †‡	1,010,676.31	529,034.15	481,642.16
Accrued depreciation—Equipment	44,486,327.33	37,649,047.26	6,837,280.07
Accrued depreciation—miscellaneous physical property ‡	6,377,594.44	.....	6,377,594.44
Other unadjusted credits§	48,602,771.04	35,880,141.66	12,722,629.38
Total	$111,275,366.09	$77,445,902.97	$33,829,463.12
CORPORATE SURPLUS.			
Additions to property through income and surplus	$351,906.71	$201,551.72	$150,354.99
Funded debt retired through income and surplus	21,087,445.45	20,139,132.31	948,313.14
Sinking fund reserves	9,397,707.47	8,954,856.79	442,850.68
Appropriated surplus not specifically invested	3,818,177.83	3,818,177.83	.....
Total appropriated surplus	$34,655,237.46	$33,113,718.65	$1,541,518.81
Profit and loss—balance	216,280,586.18	177,163,043.69	39,117,542.49
Total corporate surplus	$250,935,823.64	$210,276,762.34	$40,659,061.30
Total liabilities	$1,685,075,159.29	$1,606,975,545.27	$78,099,614.02

*The outstanding capital stock and funded debt include capital stocks and funded debt of Proprietary Companies of the par value of $349,000,700 and $109,160,590.67, respectively, a total of $458,161,290.67, which securities are owned by the Southern Pacific Company or by Proprietary Companies, or are held in sinking funds of Proprietary Companies. The cost of these securities is included in the investments shown above. Of the said amounts, stocks of the par value of $249,653,161, which stand charged on the books at $232,932,667.41, are pledged against the issue of Southern Pacific Company stocks and bonds. †Represents accrued depreciation on electric power plants and substations, general office building at San Francisco, wood preserving works, Sacramento rolling mill, oil storage plants, grain elevators, and similar facilities. ‡Represents accrued depreciation on oil lands and improvements acquired from Kern Trading & Oil Company. §Represents, principally, interest on construction advances which have not been repaid.

THE SUIT INVOLVING THE RIGHT OF THE SOUTHERN PACIFIC COMPANY TO OWN THE STOCK OF THE CENTRAL PACIFIC RAILWAY COMPANY.

On March 9, 1917, the United States District Court at Salt Lake City decided this suit in favor of the Southern Pacific Company. The Government has taken an appeal from this decision to the Supreme Court of the United States, but it has not yet shown any disposition to avail itself of the right conferred by the Expedition Act to secure a prompt hearing of its appeal. It may be that the appeal will not be brought on for hearing by the Supreme Court so long as railroads are being operated by the President.

CONTROVERSY OVER THE OREGON AND CALIFORNIA RAILROAD'S LAND GRANT.

On June 9, 1916, Congress passed an act revesting in the United States the unsold lands of the Oregon and California Land Grant. The act provided for the payment to the Oregon and California Railroad Company, its successors or assigns (or to those having liens on the land) of compensation for the lands unsold at the rate of $2.50 per acre, less whatever amounts it might be determined, in a suit which the Attorney General was directed to bring for the purpose, the United States was entitled to offset on account of any money the grantee had received from the lands in excess of $2.50 an acre by reason of past sales, leases or otherwise. The right of the United States to be reimbursed for payments made by the Government to the State of Oregon for taxes levied since the forfeiture decision of 1913, was another question to be presented in the contemplated suit. Such a suit was recently instituted and is now pending in the United States Court for the District of Oregon. Our counsel will do what they can to expedite the trial of this accounting suit in order that the balance due us for the unsold lands may be ascertained and paid.

THE SUITS INVOLVING TITLE TO THE OIL LANDS.

The taking of testimony in these cases has been concluded, and in April, 1918, the cases were argued and submitted to the United States District Court in California. They are now under advisement. A few days after the submission of these cases the United States Court of Appeals for the Ninth Circuit decided in our favor a suit which the Government had brought to cancel patents to certain lands alleged but not proven to be oil lands. In arriving at its decision the Court of Appeals rendered an opinion which supported our contentions in the oil land cases now under advisement in the lower court. Hence, the prospects of a decision confirming our title to the oil lands are encouraging.

GENERAL.

Dividends on the capital stock of your Company were declared during the year, payable as follows:

1½ per cent. paid April 2, 1917	$4,092,346.42
1½ per cent. paid July 2, 1917	4,092,351.08
1½ per cent. paid October 1, 1917	4,092,351.08
1½ per cent. payable January 2, 1918	4,092,351.08
	$16,369,399.66

With the exception of occasional bandit and Indian raids, the revolutionary disturbances on the line of the Southern Pacific Railroad of Mexico practically ceased in the early winter of 1916-17. It is estimated that the cost of property destroyed from the beginning of the Madero Revolution, in 1910, to December 31, 1917, will approximate 4,923,241 pesos, equivalent to $2,461,621. As stated in previous reports claims amounting to 287,953 pesos, on account of these losses, were filed with the Madero Government, and were approved, but have not been paid, and on account of unsettled conditions no further claims have been filed. The President of the United States of Mexico, under date of November 24, 1917, authorized the formation of a commission for the investigation of claims, but as yet the members of the commission have not been appointed. As soon as conditions permit, claims will be filed for the aforesaid losses, as well as for some 8,200,000 pesos, representing amounts due for freight and passenger services performed, for rental of road and equipment, and for materials furnished to and confiscated by the various military authorities. The average mileage of road operated during the year was 1,005 miles, an increase of about 221 miles over the average mileage of road operated during the year ended June 30, 1916. On account of the unsettled conditions, however, only such maintenance work was done during the year as was absolutely necessary to render it possible to operate trains over those portions of the line that were open for traffic.

In addition to the completed lines of railway reported under Properties and Mileage, and the still incompleted line of the Southern Pacific Railroad Company of Mexico, construction is progressing on the lines of the following companies, viz.:

	Length of Projected Line. Miles.	Track Completed. Miles.	Grading Completed. Miles.	Grading Progressing. Miles.
Southern Pacific Railroad:				
Harrington to Hamilton, Cal.	61.23	48.36	10.31	2.56
Galveston, Harrisburg & San Antonio Railway:				
Rosenberg to Damon Mound, Texas	22.00	7.30	13.70	1.00
Pacific Electric Railway:				
Lahabra-Fullerton Line	†5.07	5.07	.....	.....
Visalia Electric Railroad:				
Exeter to Strathmore	16.36	16.36	.....	.....
California Granite Company Spur	1.49	.97	.52	.....
Extension Portex South	2.40	.....	2.00	.40
*San Diego & Arizona Railway:				
San Diego to El Centro, Cal.	146.97	135.19	.....	11.78

†3.44 miles opened for traffic on September 10, 1917, and 1.63 miles on February 1, 1918. *Jointly controlled through ownership of capital stock in equal proportions with Spreckels Brothers.

On October 1, 1916, litigation of four years and seven months' standing, that had grown out of relations established by the late Mr. E. H. Harriman with the Spreckels Brothers, John D. and A. B., to build the San Diego & Arizona Railway from San Diego, California, to a point in the Imperial Valley on the line of your Inter-California Railway, was terminated and all differences composed by the execution of agreements which provide that:

1. Common Stock of the San Diego & Arizona Railway Company to the amount of $2,000,000 be authorized.
2. $6,000,000 7 per cent. cumulative preferred stock, preferred both as to income and assets, be authorized.
3. $12,000,000 6 per cent. first mortgage bonds be authorized.
4. Each party to accept $1,000,000 of common stock at par in payment of cash advances of the same amount.
5. Each party to receive preferred stock at par in payment of other cash advances made prior to October 1, 1916, with accrued interest; the holdings, however, of the two parties to be equalized by the purchase by Spreckels Brothers of one-half the excess holdings of the Southern Pacific Company.
6. Each party to pay one-half of $1,430,000 advanced to San Diego & Arizona Railway Company by local banks, and to receive therefor first mortgage 6 per cent. bonds at face value.
7. Southern Pacific Company to advance the funds necessary to complete the line (146.97 miles total) estimated to be about $5,000,000. Reimbursement to be made in first mortgage 6 per cent. bonds at face value.

The completion of this line of road, of which but 11.78 miles are uncompleted at this date, will enable your Company to serve San Diego, a rapidly growing seaport, at which the United States Government has recently established a large and very important naval base, with the shortest line from the middle West; and it will also connect San Diego with the rapidly developing Imperial Valley, which is now credited with 60,000 inhabitants, and 600,000 acres in cultivation, producing hay, grain, dairy products, hogs, and cattle, which will certainly create a heavy local business. The distance from El Centro, the centre of Imperial Valley, to San Diego by rail via Los Angeles, now 339 miles, will be reduced to 147 miles by the completion of this line.

Under the pension system put into effect on January 1, 1903, nine hundred and sixteen employes are carried on the pension rolls of the rail and water lines. The payments to them for the year amounted to $393,369.59. The payments of pension allowances for the six months ended December 31, 1916, which were not mentioned in the abridged report as of the latter date, amounted to $187,926.31.

FEDERAL CONTROL AND OPERATION.

On December 28, 1917, the President of the United States took over the possession, control, and operation of your railroad and steamship lines, under terms and conditions which thereafter were embodied in the Act of Congress of March 21, 1918, which briefly provides:

1. Compensation for the use of the property taken, to be fixed by agreement between the President and each carrier company or by suit in the Court of Claims.
2. The President is authorized to agree with each company upon an annual compensation *not exceeding* a sum equivalent to the average annual railway operating income of the carrier for the three years ended June 30, 1917. The railway operating income is determined by subtracting:
   (*a*) Operating expenses;
   (*b*) Uncollectible railway revenues; and
   (*c*) Railway tax accruals, excluding war taxes;

from the revenues accruing from the carriage of freight, passenger, mail, express, etc. The railway operating income thus determined is to be increased or diminished by the net earnings or losses, as the case may be, from equipment rents and joint facility rents.

(It is contemplated that an agreement with the President, if made, shall not only fix the compensation but shall contain adequate provisions respecting:
   (*a*) Upkeep;
   (*b*) Betterments and additions;
   (*c*) Accounting;
   (*d*) Payment of compensation;
   (*e*) Deductions from compensation, etc.

At this writing representatives of the President and of the railroads are conferring in the effort to agree upon appropriate standard clauses for the agreement defining their respective rights and obligations.)

3. An estimate of the annual rental to be paid by the Government, assuming that all the transportation properties listed under the head of "Properties and Mileage" on page 5 of this report are taken over by the Government, is $48,162,843.92.

The *net* miscellaneous rents, and leased road rents, accrue to the Company.

The annual rental to be increased by an amount reckoned at a reasonable interest rate to be fixed by the President, upon the cost of any additions and betterments, less retirements, and cost of road extensions made with the approval or by order of the President while the property is under Federal control.

4. War taxes to be paid by the carrier out of its corporate funds.
5. The property to be adequately maintained, repaired, renewed, and depreciation covered, so that it may be returned in substantially as good repair and as complete equipment as it was at the beginning of Federal control.
6. Electric street and interurban railroad properties are excluded from Federal control.
7. If the agreement authorized by the Act is not made, a judicial ascertainment of the compensation to be paid is thus provided for; the Company's claim for compensation is to be referred to a board of three referees to be appointed by the Interstate Commerce Commission; if the report of this board is satisfactory to the President and the Company an agreement may be made on the basis thereof. Otherwise a resort must be had to the Court of Claims to have the amount of compensation determined, in which event the report of the referees is to be taken as *prima facie* correct. Neither the referees nor the Court are bound to adopt the measure of compensation based on previous earnings. Payment of the award of the Court must await Congressional appropriation. In the meantime the President, at his option, *may* pay *not exceeding* 90 per cent. of the *estimated* annual just compensation due the carrier.
8. Dividends during Federal control not to exceed the regular rate of dividends during the three test years.
9. The President may order any carrier to make, at its own expense, additions, betterments, or road extensions, and to provide terminals, equipment, etc. He may advance all or part of the expenditure on interest rates to be fixed by him, or he may deduct all or part from the just compensation due the carrier. Any loss claimed by the carrier thereby, if not determined by agreement, may be submitted to a board of referees and to the Court of Claims. (The indebtedness which may be imposed upon the carrier under this paragraph is unlimited.)
10. Carriers may issue securities, secured or unsecured by mortgage, for the purpose of providing funds for maturing obligations or for other proper expenditures, as the President may approve.
11. The President to prescribe rates, fares, charges, classifications, and practices, which take effect as he may direct, subject, however, to review by the Interstate Commerce Commission.
12. The period of Federal control to continue during the war, and thereafter not to exceed 21 months following the declaration of peace.
13. Moneys derived from the operation of the carriers during Federal control are to be the property of the United States.

This assumption of the control and operation of the railroads of the United States by the Government, on December 28, 1917, marked an epoch in their history. On that day the era of management and control by the owners of the properties, that had existed since their organization, ended, and one of indefinite duration under Government management began. The year 1917 closed with the *esprit de corps* and discipline of your working organization, the physical condition of your property, and the safety and other results of operation, at a higher standard than ever before had been attained. Therefore the time seems appropriate to survey the achievements of 32 years, so as to form an idea of the growth of your property and the returns from its operation, by comparing data for the first calendar year of its existence (1886) with the corresponding data of the last year of private management (1917). The income accounts and operating statistics are the sources of information for making the following comparisons, and the balance sheets translated into ordinary conversational language give an idea

of the magnitude of the property interests and financial strength of the Southern Pacific Company:

COMPARATIVE OPERATIONS OF SOUTHERN PACIFIC SYSTEM IN 1886, THE FIRST COMPLETE CALENDAR YEAR OF OPERATION, AND IN 1917, THE LAST YEAR OF OPERATION BY ITS STOCKHOLDERS.

		Year Ended December 31, 1917.	Year Ended December 31, 1886.	Per Cent. of Increase.
	NUMBER OF STOCKHOLDERS OF SOUTHERN PACIFIC COMPANY	37,088	91	—
1.	Average miles of road operated.	11,137	4,846	129.82
2.	Freight revenue	$132,608,207	$18,668,421	610.33
3.	Ton miles of freight	14,803,735,481	1,439,113,580	928.67
4.	Revenue per ton mile of freight	.923 cents	1.297 cents	(c) 28.84
5.	Freight train miles	24,550,167	(a) 9,616,218	155.30
6.	Tons of freight per loaded and empty car	17 76	8.07	120.07
7.	Revenue per freight train mile	$5 04	(b) $1.94	159.80
8.	Tons of freight per train	602.98	149.66	302.90
9.	Passenger revenue	$45,380,193	$8,464,727	436.11
10.	Passengers carried one mile	2,024,390,972	398,031,884	408.60
11.	Passenger train miles	31,085.797	(a) 5,953,054	422.18
	OPERATING INCOME.			
12.	Total operating revenue	$193,971,490	$31,797,882	510.01
13.	Net revenue from miscellaneous operations, hire of equipment, and net rentals	8,080,390	284,797	2,737.25
14.	Total revenue	$202,051,880	$32,082,679	529.79
15.	Total operating expenses and uncollectible revenue	$120,672,060	$18,514,656	551.77
16.	Railway tax accruals	13,792,176	888,623	1,452.08
17.	Total expenses and taxes	$134,464,236	$19,403,279	593.00
18.	Operating income including hire of equipmentf and net rentals	$67,587,644	$12,679,400	433.05
	OTHER INCOME.			
19.	Interest and dividends received on securities owned, and other income	$7,248,979	$544,535	1,231.22
20.	Total gross income	$74,836,623	$13,223,935	465.92
	DEDUCTIONS FROM GROSS INCOME.			
21.	Interest on funded debt	$24,219.075	$8,754,810	176.64
22.	Other payments	1.488.131	358,131	315.53
23.	Total deductions from gross income	$25.707.206	$9,112,941	182.10
24.	Net income	$49,129,417	$4,110,994	1,095.07
	DISPOSITION OF NET INCOME.			
25.	Income applied to sinking and other reserve funds	$978,097	$1,196,772	(c) 18.27
26.	Income balance transferred to credit of Profit and Loss	$48,151,320	$2,914,222	1,552.29
27.	Per Cent. of net income on outstanding capital stock of Southern Pacific Co	17.65	3.27	439.76
28.	Cost of road and equipment	$983,482,275	$396,626,000	147.96

(a) Figures for 1886 represent locomotive miles, train miles not obtainable.
(b) Based on freight locomotive miles, freight train miles not obtainable.
(c) Decrease.

In the ten years ending December 31, 1917, the Company transported 422,000,000 passengers *with but one fatality* in a train accident.

By the exercise of greater care in inspecting and purchasing, the failures of rails per 100 miles of track, equated as to traffic borne, have fallen 35 per cent. in eight years, and in number are but one-fourth as many as those on all railroads in the United States and Canada, based on the latest available data.

Nineteen per cent more gross ton miles per pound of fuel consumed, 45 per cent. more ton-miles per freight car, and 86 per cent. more ton-miles per freight locomotive owned were moved in 1917 than in 1900.

On December 31, 1917, the combined *obligations (debts), of every description,* of your Company and its proprietary companies, consisting of amounts owed to security holders, employees, tradesmen, connecting lines, tax collectors, and others (not including $51,874,598.08 of accrued depreciation on road, equipment, and miscellaneous physical property) amounted to $1,382,264,737 57

The companies held to meet such obligations *assets (property) amounting to* 1,685,075,159 29

as follows:

(1) Book value of the investment in transportation property carried on the books of the companies forming the Southern Pacific steam transportation system, consisting of 11,164 miles of first main track, 561 miles of additional main track, 4,150 miles of yard track and sidings, 25 ocean steamships, 5 river steamships, 18 ferry boats and car transfers, 10 tugs, 63 barges, and 19 other vessels, the whole forming a transcontinental system extending from New York City, via New Orleans and Galveston to San Francisco, Cal., and Portland, Ore., with a line extending from Ogden, Utah, to San Francisco, Cal. 983,482,275 20

(2) Sinking funds for the redemption of outstanding funded debt, consisting of interest-bearing securities, and cash in the hands of trustees, the income from which for the year amounted to $687,322.39.. 13,711,547 27

(3) Investments in miscellaneous physical property consisting principally of (*a*) the California Fuel Oil Department of Southern Pacific Company with an annual production of about 9,500,000 barrels of oil, and annual gross earnings of approximately $17,000,000, and (*b*) terminal and other real estate acquired in anticipation of future use 30,778,341 24

(4) Investments in affiliated companies 523,560,538 04

These investments in affiliated companies are represented by property as follows:

Stocks and bonds of proprietary companies of the par value of $446,690,290.67, included in the outstanding obligations hereinbefore mentioned but which are owned by the Southern Pacific Company and its proprietary companies.

ELECTRIC RAILWAYS.

	Miles of Road Operated
Fresno City Railway and Fresno Traction Company	26.71
Pacific Electric Railway Company	612.39
Peninsular Railway Company	63.60
San Jose Railroads	28.46
Stockton Electric Railroad Company.	12.74
Visalia Electric Railroad Company	36.58
Total	780.48

STEAM RAILWAYS—FULL OWNERSHIP

Southern Pacific Railroad of Mexico	1,240.52

STEAM RAILWAYS—HALF OWNERSHIP

San Diego & Arizona Railway Company	146.97
Independence & Monmouth Railway Company	2.50
Northwestern Pacific Railroad Company	507.30
San Diego & Arizona Railway Company (11.78 miles under construction)	146.97
Sunset Railway Company	59.66
Total	716.43
Grand Total	2,737.43

OTHER COMPANIES.

Albion Lumber Company. 23,019 acres redwood timber, with saw mill and logging roads.

Associated Oil Company. (50.48 per cent. of authorized stock owned by S. P. Co.); annual gross earnings, $28,000,000; annual production, including subsidiaries, 10,000,000 barrels of oil.

Associated Pipe Line Company. (One-half of authorized stock owned by S. P. Co. and one-half by Associated Oil Company); 561 miles of eight inch oil pipe lines, 50,000 barrels daily capacity.

Beaver Hill Coal Company. 924 acres coal lands, Coos County, Oregon.

East Coast Oil Company. Annual gross earnings $1,300,000; annual production 3,150,000 barrels of oil; development of oil near Tampico, Mexico, on leased lands.

Pacific Fruit Express Company. Owned half by Southern Pacific Company and half by Union Pacific Railroad. 14,233 ventilated refrigerator cars.

Rockaway Pacific Corporation. 563.95 acres on Jamaica Bay, near Brooklyn, N. Y.

Rio Bravo Oil Company. Annual production 320,000 barrels of oil.

Southern Pacific Building Company. Office building, Houston, Texas.

(5) Other investments, principally securities in outside companies 24,730,955 60

(6) Current, deferred, and unadjusted assets consisting of:

Cash	$31,733,162.61	
Cash assets	27,319,549.20	
Material and supplies	24,406,115.91	
Deferred assets and unadjusted items	25,352,674.22	
		108,811,501 94

Grand total of assets $1,685,075,159 29

which exceeds all debts and obligations, including the outstanding capital stock, by an amount of $302,810,421.72, of which $51,874,598.08 represents reserves for accrued depreciation and $250,935,823.64 represents an *invested* surplus which is equivalent to nearly 92 per cent. of the outstanding capital stock.

In addition the companies own 10,978,818 acres of unsold subsidy lands, allocated thus:

(*a*)	Central Pacific Railway Company	7,076,215 acres
(*b*)	Houston & Texas Central Railroad Company	18,688 "
(*c*)	Southern Pacific Land Company	3,883,915 "
	Total	10,978,818 "

and have a claim against the United States for the value of 2,353,446 acres of unsold lands of the Oregon & California Railroad land grant taken over by the Government under Act of Congress passed June 9, 1916, as more fully explained above.

Prior to 1905, when the first dividend was paid, the surplus accruing each year from the date of the organization of the Company in 1884 was reinvested in the property, and the same course has been followed with the surplus remaining each year, from 1906 to date, after the payment of dividends. As a result of this policy, 46 cents of each dollar of surplus earned during the Company's existence have been paid in dividends and 54 cents of each dollar have been put back into the property.

The Board is grieved to announce the death, on May 13, 1918, of Mr. William Mahl, formerly Vice-President and Controller of your Company. Mr. Mahl was connected with the Southern Pacific Company in various capacities of responsibility and trust, all of which he filled with conspicuous ability and fidelity from the date of its organization in 1884 to April 1, 1913, when he was retired on pension.

The Board takes pleasure in conveying to the officers and employees of the Company its appreciation of their loyal and efficient service, which has produced results far exceeding in excellence any ever attained in the history of the Company.

By order of the Board of Directors,

JULIUS KRUTTSCHNITT,

Chairman of the Executive Committee.

Financial and Construction

Railway Financial News

ALABAMA, TENNESSEE & NORTHERN.—This property has been bought by the bondholders' committee for $225,000.

BALTIMORE & OHIO.—Speyer & Co. and Kuhn, Loeb & Co., both of New York, have arranged for the extension for 60 days of $8,000,000 Baltimore & Ohio notes. These notes are secured by deposit of Reading common and preferred stock and were placed in January. They became due July 31. Besides these $8,000,000 notes which are due October 1, there are $10,500,000 notes sold about a month ago, which will also mature on October 1.

CHICAGO, MILWAUKEE, & ST. PAUL.—The following is from a circular sent out by A. J. Earling, chairman of the board of directors of the Chicago, Milwaukee & St. Paul: There have been many inquiries respecting the non-payment of dividends on the capital stock of the company, the last dividend having been declared in July, 1917, and paid in September, 1917. The government on December 28, 1917, took over the possession and operation of the company's railroad and system of transportation, including all balances then due from its agents and conductors, all cash on hand as working capital and all materials and supplies. On March 21, 1918, Congress passed the so-called Federal Control Act, which provides, among other things, for the payment of compensation by the government for the possession and operation of railroads and systems of transportation taken over, not exceeding the average annual railway operating income for the three years ended June 30, 1917. The amount of this average annual railway operating income has not yet been certified to the President by the Interstate Commerce Commission as provided by the act, and the agreement between the government and the railway companies, also provided for in the act, has not yet been concluded. The board of directors, therefore, do not deem it advisable at this time to take any action respecting dividends.

SOUTHERN RAILWAY.—The Carolina & North Western, with lines from Chester, S. C., to Edgemont, N. C., 134 miles, has been taken over for operation by the Southern Railway. The company will remain a separate corporation, subsidiary to the Southern.

TOLEDO & CINCINNATI.—This company, which is the successor to the Cincinnati, Hamilton & Dayton, has been granted an extension of time of three months within which to decide on carrying out leases and contracts of the Cincinnati, Hamilton & Dayton.

Railway Construction

CHICAGO GREAT WESTERN.—This company has given a contract to T. S. Leak & Company, Chicago, for a 150-ft. extension to the freight house at Omaha to provide space for the Rock Island. The extension will have brick walls, concrete floor and foundation and Johns-Manville prepared roof, and will be tapering in shape 40 ft. wide at one end and 22 ft. at the other. The extension with additional track facilities will cost about $20,000. The Great Western also let contracts to the Railroad Water & Coal Handling Company, Chicago, for a 100-ton frame coaling station at Kansas City, to be equipped with Ogle hoist and operated by Fairbanks Morse type Y oil engine, and for a 100-ton frame coaling station at Talmadge, Iowa; also awarded contracts for two 50-ton frame coaling stations same type to the Ogle Construction Company, Chicago, one for Rochester, Minn., and the other for Mason City, Iowa, to cost about $10,000 apiece.

CHICAGO, ROCK ISLAND & PACIFIC.—This company has given contracts to the Railroad Water & Coal Handling Company for a 600-ton coaling station with 44-ft. hopper and sand drying plant at Burr Oak, Ill.

Railway Officers

Executive, Financial, Legal and Accounting

GOVERNMENT*

A. H. Plant.—See Operating Officers.

H. G. Morison, general solicitor of the Carolina, Clinchfield & Ohio and the Carolina, Clinchfield & Ohio of South Carolina, has been appointed assistant general solicitor, with headquarters at Johnson City, Tenn.

D. W. Cooke, vice-president of the Erie, has been appointed federal fuel administrator for New York. To assume his new duties, Mr. Cooke has resigned as chairman of the Traffic Executive Committee of the Allies, but will remain a member of that organization, and will represent it on the Exports Control Committee.

W. C. Mason has been appointed assistant general solicitor of the Philadelphia & Reading, the Central of New Jersey, the New York & Long Branch, the Atlantic City and the Port Reading, with headquarters at Philadelphia, Pa.; **A. H. Elder,** assistant general counsel of the Central of New Jersey, has been appointed assistant general solicitor and **W. A. Barkalow,** assistant general counsel, has been appointed counsel of all the above named roads; both with headquarters at New York.

Theodore H. Burgess, whose appointment as general solicitor of the Erie, with headquarters at New York, has already been announced in these columns, was born September 20, 1882, at Auburn, N. Y., and was educated at Auburn High School, Hamilton College and Albany Law School. He began railway work with the Erie as a law clerk in 1908, and in September, 1911, became assistant to general solicitor. Two years later he was appointed assistant general solicitor, serving in that capacity until his recent appointment as general solicitor of the same road, the New York, Susquehanna & Western, the New Jersey & New York and the Chicago & Erie.

Charles Norris Rambo, whose appointment as manager of the Insurance and Fire Protection Section, Division of Finance and Purchases, of the United States Railroad Administration, with office at Washington, has already been noted, was born in Norristown, Pa., July 13, 1873, where he has since resided. He graduated from Norristown High School, and began his business career with the Pencoyd Iron Works. In 1895 he entered the employ of the Pennsylvania Railroad under the auditor of freight receipts. In 1898 he was transferred to the Insurance Department, and helped to start the Mutual Fire, Marine and Inland Insurance Company, which was organized by the Pennsylvania, the Baltimore & Ohio, the Norfolk & Western and other prominent eastern railroads. In 1903 he was elected secretary and superintendent of that company. Its field of usefulness has spread practically over what is known as the Eastern railroad systems. It was organized for the purpose of placing with it a part of the large fire and marine insurances on railroad properties, and through its inspection bureau and educational work it has greatly promoted fire prevention on railroad properties. Mr. Rambo in 1913 was one of the organizers of the Railway Fire Protection

C. N. Rambo

*Refers to appointments under United States Railroad Administration.

Association. He has resigned his place with the Mutual Fire, Marine and Inland Insurance Company and will devote his entire time to his new work.

CORPORATE†

W. F Turner, controller of the Spokane, Portland & Seattle, was elected president of the Spokane, Portland & Seattle, the Oregon Trunk, the Pacific & Eastern and the Oregon Electric July 18. Mr. Turner succeeds **L. C. Gilman,** who was recently appointed district director of the Puget Sound district.

Changes on the Chicago, Rock Island & Pacific to look after the interest of the corporation are announced as follows: **Charles Hayden,** chairman of the finance committee has been elected president; **N. L. Amster,** director, has been elected chairman of the executive committee succeeding **J. E. Gorman; A. C. Riegway** continues as vice-president; **George H. Crosby** continues as vice-president; **M. L. Bell** continues as general counsel; **Frank Nay** continues as controller; and **M. L. Bell** has been elected a director to succeed Mr. Gorman.

S. Davies Warfield, chairman of the board of the Seaboard Air Line, with headquarters at Baltimore, Md., has been elected also president of the corporation to succeed **W. J. Harahan,** who resigned to become federal manager; **Martin J. Caples,** vice-president of the Hocking Valley, with office at Columbus, Ohio, and until recently also vice-president of the Chesapeake & Ohio, has been elected vice-president and a director of the Seaboard Air Line; **Robert L. Nutt,** treasurer, with office at Portsmouth, Va., has been elected secretary and treasurer, and **F. L. Nellis** has been elected assistant secretary. The corporation's headquarters is at Baltimore, Md., with branch office in New York.

Operating

GOVERNMENT*

C. E. Timpson has been appointed superintendent of car service of the Long Island Railroad, with office at Jamaica, N. Y.

R. V. Taylor, federal manager of the Mobile & Ohio and the Southern Railway in Mississippi, has been appointed federal manager also of the Delta Southern, with office at Mobile, Ala.

A. M. Calhoun, assistant to the president of the Kansas City Southern, with office at Kansas City, Mo., has been appointed assistant to the federal manager, **J. A. Edson,** with the same headquarters.

J. H. Young, federal manager of the Norfolk Southern and the Virginian Railway, has been appointed federal manager also of the Carolina Railroad and the Kinston Carolina Railroad, with office at Norfolk, Va.

E. H. Coapman, federal manager of the Southern Railway and the roads mentioned in the issues of July 19, page 153, and July 26, page 194, has been appointed federal manager also of the State University Railroad, with office at Washington, D. C.

A. J. Chapman has been appointed general agent of the Southern Railway System, with office at New Orleans, La., vice **E. T. Steele,** resigned, and **Walter Shipley** has been appointed general agent, with office at Memphis, Tenn., vice **R. B. Pegram,** promoted.

C. G. Burnham, federal manager of the Chicago, Burlington & Quincy and the Quincy, Omaha & Kansas City, has had his jurisdiction extended over that portion of the Toledo, Peoria & Western, west of Peoria, including the Peoria terminals, the Rockport, Langdon & Northern and the Rapid City, Black Hills & Western.

A. B. Woodward, chief despatcher on the Utah Lines of the Denver & Rio Grande, at Salt Lake City, Utah, has been appointed trainmaster at Salt Lake, succeeding **C. E. Leverich,** who has been granted a leave of absence to enter government service. **E. Standiford** succeeds Mr. Woodward. **S. E. Willis** has been appointed night chief despatcher, succeeding Mr. Standiford, effective July 22.

J. W. Kelly, Jr., general manager of the Dayton & Union, and superintendent of the Dayton Union Railway, with office at Dayton, Ohio, has been appointed assistant superintendent of the Toledo division of the Baltimore & Ohio, with office at Dayton, vice **E. J. Correll,** transferred. The Dayton Union Railway is now operated as a part of the Toledo division of the Baltimore & Ohio.

C. O. Bradshaw, superintendent of the Illinois and the Racine & Southwestern divisions of the Chicago, Milwaukee & St. Paul, has been appointed general superintendent of the middle district, with headquarters at Milwaukee, Wis., succeeding **P. C. Eldredge.** The latter has been appointed superintendent of the La Crosse division, with headquarters at Milwaukee, succeeding **L. T. Johnston,** who has been transferred to Savannah, Ill., to take the place of Mr. Bradshaw, promoted, effective August 1.

Willis Edward Maxson, whose appointment as general manager of the Gulf, Colorado & Santa Fe, the Ft. Worth & Rio Grande, the St. Louis, San Francisco & Texas, the Texas Midland and the International & Great Northern (from Spring to Ft. Worth and Madisonville branch), with headquarters at Galveston, Tex., was announced in the *Railway Age* on July 12, was born at Mapleton, Kansas. Mr. Maxson was educated at the Baker University at Baldwin, Kansas, and entered the service of the Atchison, Topeka & Santa Fe, as clerk and telegraph operator at Girard, Kansas, in February, 1885. From December, 1886, to December, 1889, he was employed in the engineering department on construction work. The following two years he was relief agent of the Southern division, at Wellington, Kansas, and Wichita. From February, 1891, to October, 1897, he was joint agent for the Atchison, Topeka & Santa Fe, and the Gulf, Colorado & Santa Fe, at Purcell, Okla. On October 1, 1897, he was appointed agent and superintendent of terminals at Galveston, Tex., and in January, 1901, he was appointed superintendent of the Beaumont division, at Beaumont, Tex. From August, 1906, to July 1, 1918, he was general superintendent of the Gulf, Colorado & Santa Fe, at Galveston, which position he held at the time of his appointment as noted above.

W. E. Maxson

C. H. Stein, superintendent of the Central of New Jersey, with office at Jersey City, N. J., has been appointed assistant to general manager of the same road, also of the Philadelphia & Reading, the New York & Long Branch, the Atlantic City and the Port Reading; **O. W. Stager,** superintendent of transportation of the Philadelphia & Reading, with office at Philadelphia, Pa., has been appointed superintendent of transportation of all the above named roads; both with headheadquarters at Philadelphia, Pa.

C. A. Beach, division superintendent of the Philadelphia & Reading, at Philadelphia, Pa., has been appointed assistant general superintendent of that road and also of the Central of New Jersey, the New York & Long Branch, the Atlantic City and the Port Reading, with office at Philadelphia, Pa.; **R. B. Abbott,** superintendent of the Harrisburg division, with office at Harrisburg, Pa., has been appointed superintendent of the New York division; **J. C. Peters,** trainmaster,

†Refers to appointments made by railway corporations or by railroad not under federal control.

at Philadelphia, has been appointed superintendent of the Philadelphia division; all with offices at Philadelphia; **I. T. Tyson,** superintendent of the Reading division, at Reading, Pa., has been appointed superintendent of the Reading and Harrisburg divisions, with office at Reading, and **C. E. Chamberlin,** acting trainmaster at Harrisburg, has been appointed assistant superintendent of the Harrisburg division, with office at Harrisburg.

C. E. Taylor, superintendent of terminals of the Atchison, Topeka & Santa Fe, at Chicago, has been appointed operating assistant to the terminal manager of the Chicago Terminal district; **Fred Zimmerman,** vice-president, in charge of traffic of the Chicago, Indianapolis & Louisville, has been appointed traffic assistant and **D. I. Forsyth,** acting chairman of the Chicago committee, of the Car Service Section, has been appointed car service assistant. These three with Mr. Taylor as chairman will also constitute a committee to supervise the introduction of a sailing day plan in Chicago. **T. Q. Proctor,** assistant general freight agent of the Chicago, Milwaukee & St. Paul, at Chicago, has been appointed chairman of a committee to supervise operation of a sailing day plan in all terminals of the Northwestern region except Chicago.

Martin Harvey Clapp, whose appointment as manager of the telegraph section of the United States Railroad Administration, with headquarters at Washington, D. C., was announced in the *Railway Age* on July 12, was born at Montague, Mass., on August 9, 1874. He graduated from the electrical engineering course at the Worcester Polytechnic Institute in 1895, following which he was employed in the shop of the General Electric Company at Schenectady, N. Y. Later he went with the American Telephone & Telegraph Company and was employed as inspector, district inspector, special agent, etc., covering a period of about 8 years, following which he entered the service of an independent telephone company in the middle west, serving first as consulting engineer of a conference committee composed of representatives of the Kansas City Long Distance Telephone Company, the Kinloch Long Distance Company, the Independent Telephone & Telegraph Company of Louisville, Ky., the United States Telephone Company and the Pittsburgh & Allegheny Company. For a short period after that he was chief engineer of the Kinloch Long Distance Company, at St. Louis, and then chief engineer of the Rochester Telephone Company, at Rochester, N. Y., following which he returned to the Bell telephone interests in 1907, and served for one year as supervisor of maintenance for the American Telephone & Telegraph Company, at Chicago, and for two and a half years as division superintendent for the same company, at Chicago. From August 1, 1910, to August 1, 1911, he was division superintendent of the Western Union Telegraph Company, at Chicago, following which he entered the service of the Northern Pacific, as superintendent of telegraph, which position he held until his appointment, as mentioned above.

M. H. Clapp

W. N. Foreacre, federal general manager of the Southern Railway, lines east, the Carolina, Clinchfield & Ohio, and the Carolina, Clinchfield & Ohio of South Carolina, with headquarters at Charlotte, N. C., has been appointed federal general manager also of the Baltimore & Ohio (segregated line between Harrisonburg & Lexington, Va.); Asheville & Craggy Mountain; Asheville & Southern; Atlantic & Yadkin; Blue Ridge; Carolina & Northwestern; Carolina & Tennessee Southern; Cumberland Railway; Danville & Western; Hartwell Railway; High Point, Randleman, Asheboro & Southern; Lawrenceville Branch; Roswell Railroad; Sievern & Knoxville, State University Railroad; Tallulah Falls; Tennessee & Carolina Southern and the Yadkin Railroad. **Horace Baker,** federal general manager of the Southern Railway, lines west; the Georgia Southern & Florida and the Alabama & Vicksburg, with headquarters at Cincinnati, Ohio, has been appointed federal general manager also of the Northern Alabama; Ensley Southern; Cincinnati, Burnside & Cumberland River; Harriman & Northeastern; Hawkinsville & Florida Southern and the Louisiana & Mississippi Transfer (at Vicksburg, Miss.)

The authority of the following officers of the Southern Railway has been extended over the Asheville & Craggy Mountain; Asheville & Southern; Atlantic & Yadkin; Blue Ridge Railway; Carolina & Northwestern; Carolina & Tennessee Southern; Cincinnati, Burnside & Cumberland River; Cumberland Railway; Danville & Western; Ensley Southern; Harriman & Northeastern; Hartwell Railway; Hawkinsville & Florida Southern; High Point, Randleman, Asheboro & Southern; Lawrenceville Branch Railroad; Northern Alabama Railway; Roswell Railroad; Sievern & Knoxville; State University Railroad; Tallulah Falls; Tennessee & Carolina Southern; Yadkin Railroad, and Louisiana & Mississippi Transfer (at Vicksburg, Miss.): **A. H. Plant,** comptroller; **G. W. Taylor,** staff officer, transportation; **J. Hainen,** staff officer, mechanical; **F. W. Brown,** staff officer, headquarters; **H. H. Laughton,** staff officer, materials and supplies; **W. H. Gatchell,** staff officer, loss and damage prevention; **E. H. Shaw,** assistant traffic manager; **Alex. Grant,** mail traffic manager; **W. M. Netherland,** manager, dining cars; **S. R. Prince,** general solicitor; **E. F. Parham,** federal treasurer; **W. H. Wells,** consulting engineer construction; **E. M. Durham, Jr.,** chief engineer construction, and **R. B. Pegram,** general purchasing agent; all with headquarters at Washington, D. C.

The following changes on the Chicago, Rock Island & Pacific became effective August 1: **A. W. Towsley,** assistant to the vice-president in charge of operation and construction, has been appointed transportation assistant to the general manager, with headquarters at Chicago. **H. G. Clark,** assistant to the vice-president in charge of operation and construction, at Chicago, has been appointed maintenance of way assistant to the general manager, with the same headquarters. The office of the superintendent of car service has been abolished, and **J. R. Pickering,** who has held that office, has been appointed superintendent of transportation. **C. W. Jones,** general manager, first district, at Des Moines, Iowa, has been appointed manager of the same district with the same headquarters. **A. B. Warner,** division superintendent, at Ft. Worth, Tex., has been appointed manager, second district, at El Reno, Okla. Officers heretofore reporting to the vice-president in charge of operation and construction will report to the general manager. **D. Coughlin,** division supernitendent at Rock Island, Ill., has been appointed transportation assistant to Mr. Jones, at Des Moines, Iowa. **A. B. Ramsdell,** assistant general manager, first district, at Des Moines, Iowa, has been appointed assistant to Mr. Jones, at Des Moines, Iowa. **C. L. Ruppert,** division superintendent at Trenton, Mo., has been appointed superintendent of the Illinois division, at Rock Island, Ill. **H. F. Reddig,** division superintendent at Herington, Kan., has been transferred to the Missouri division, with headquarters at Trenton, Mo. Officers heretofore reporting to the district general manager will report to the manager. **H. L. Reed,** acting assistant general manager of the second district, at El Reno, Okla., has been appointed transportation assistant to Mr. Warner, at El Reno. **E. P. Kelly** has been appointed assistant to Mr. Warner, at El Reno. **C. B. Pratt,** division superintendent at El Reno, Okla., has been transferred to the Kansas division, at Herington, Kan.; **H. R. Saunders,** division superintendent, at Amarillo, Texas, has been appointed superintendent of the Oklahoma division, at El Reno; **C. H. Hubbell,** who has been engaged in special work in the vice-president's office at Chicago, has been appointed superintendent of the Amarillo division, at Amarillo, Tex. **H. J. Sewell,** division superintendent at El Dorado, Ark., has been transferred to the southern division, at Ft. Worth, Texas, and **J. G. Bloom,** division engineer at Herington, Kan., has been appointed

superintendent of the Louisiana division, at El Dorado, Ark. Officers heretofore reporting to the general manager will report to the manager.

Traffic

GOVERNMENT*

E. H. Shaw.—See Operating Officers.

Charles G. Clark, assistant general passenger agent of the Michigan Central, at Chicago, has been appointed manager of the Consolidated Ticket Offices at Chicago, for Eastern and Southern roads.

Louis H. McCormick, general agent in the passenger department of the Chicago, Rock Island & Pacific, at Chicago, has been appointed manager of the consolidated ticket office in that city, for the northern and the western roads.

E. D. Brigham, assistant freight traffic manager of the Chicago & North Western, with office at Chicago, has been appointed by the regional director, manager of ore, coal and grain traffic, of Lake Superior and Upper Lake Michigan ports, with headquarters at Duluth, Minn.

R. L. Russell, general freight agent of the Philadelphia & Reading, has been appointed assistant freight traffic manager of the same road, and also of the Central of New Jersey, New York & Long Branch, the Atlantic City and the Port Reading, with office at Philadelphia, Pa.; **E. B. Crosley,** general coal freight agent of the Philadelphia & Reading, has been appointed coal traffic manager, with office at Philadelphia, and **A. Hamilton,** general freight agent of the Central of New Jersey, has been appointed general freight agent of all the above named roads, with office at New York.

William C. Hope, whose appointment as passenger traffic manager of the Philadelphia & Reading, the Central of New Jersey, the New York & Long Branch, the Atlantic City and the Port Reading, with headquarters at New York, has already been announced in these columns, was born on June 13, 1859, at Somerville, N. J. He was educated at Wyckoff's Preparatory School, Elizabeth, N. J., and Dr. Chapin's Collegiate School, New York. On May 1, 1878, he began railway work with the Central of New Jersey, and has been in the continuous service with that road ever since. He was appointed assistant general passenger agent in July, 1901, and was promoted to general passenger agent in September, 1906, which position he held at the time of his recent appointment as passenger traffic manager of the railroads mentioned above.

W. C. Hope

Engineering and Rolling Stock

GOVERNMENT*

W. H. Wells.—See Operating Officers.

T. J. Clayton has been appointed master mechanic of the Texarkana & Fort Smith, with headquarters at Texarkana, Texas, succeeding **A. D. Williams,** resigned.

H. K. Christie, air brake inspector and instructor of the Pere Marquette, with headquarters at Grand Rapids, Mich., has left the service of that company to enter advertising work with a Chicago agency.

L. W. Strayer, assistant division engineer of the Baltimore & Ohio, with office at New Castle, Pa., has been appointed division engineer of the New Castle division, with headquarters at New Castle, vice **D. W. Cronin,** deceased.

E. J. Correll, assistant division superintendent of the Baltimore & Ohio, with office at Dayton, Ohio, has been appointed division engineer of the Toledo division, with office at Dayton, Ohio, vice **F. J. Parrish,** assigned to other duties.

M. A. Gleeson, general foreman, locomotive department, of the Baltimore & Ohio, with office at New Castle Junction, Pa., has been appointed master mechanic of the New Castle division, with office at New Castle Junction, vice **A. H. Hodges,** transferred.

H. Clewer, superintendent fuel economy of the Chicago, Rock Island & Pacific, at Chicago, has been appointed regional supervisor of fuel conservation of the Pocahontas region for the United States Railroad Administration, with headquarters at Roanoke, Va.

C. H. Mattier, assistant engineer in the chief engineer's office of the Illinois Central, who has been engaged on terminal work in Chicago, has been appointed assistant engineer, with the same headquarters, succeeding **L. P. Kimball,** who has entered the service of the Baltimore & Ohio, as mentioned elsewhere in these columns.

A. H. Griffith has been appointed engineer of construction; **A. B. Scowden** has been appointed engineer of bridges; **L. P. Kimball** has been appointed engineer of buildings, and **E. T. Ambach** has been appointed engineer of signals of the Baltimore & Ohio, western lines, the Dayton & Union Railroad and the Dayton Union Railway, all with headquarters at Cincinnati, Ohio.

Leland P. Kimball, assistant engineer in the office of the chief engineer of the Illinois Central, at Chicago, has been appointed engineer of buildings of the Baltimore & Ohio, western lines, with headquarters at Cincinnati, Ohio, effective July 16. Mr. Kimball entered the employ of the Illinois Central, in August, 1904, and for one year was a clerk in the operating department. He was then transferred to the engineering department as an apprentice on the Chicago division; later he was employed as rodman, instrument man, inspector and assistant engineer in the maintenance, construction and bridge departments. From October, 1915, to May, 1918, he was chief draftsman in the building department, and on the latter date was appointed assistant engineer in the chief engineer's office, which position he held until his appointment as mentioned above.

Edward M. Durham, Jr., whose appointment as chief engineer of construction of the Southern Railway System, the Alabama & Vicksburg, the Georgia, Southern & Florida, the Carolina, Clinchfield & Ohio and the Carolina, Clinchfield & Ohio of South Carolina, with headquarters at Washington, D. C., has already been announced in these columns, was born on October 23, 1875, at Memphis, Tenn., and was educated at Lehigh University. He began railway work in 1899, with the Chicago & North Western and subsequently served on the Southern Railway as assistant engineer at Selma, Ala. In 1901, he was appointed resident engineer at Birmingham, Ala., and in 1905, became principal assistant engineer at Birmingham, of the same road. He went to the Atlanta, Birmingham & Atlantic in 1914 as special valuation engineer, with office at Atlanta, Ga., and in 1916, returned to the service of the Southern Railway as general agent, at Chattanooga, Tenn. The following year he was appointed assistant chief engineer of construction, with office at Washington, D. C., which position he held until his recent appointment as chief engineer construction with office at Washington, as above noted.

A. J. Davis, master mechanic of the Erie, at Hornell, N. Y., has been transferred to the New York division and side lines, having charge of passenger equipment, with headquarters at Jersey City, N. J., succeeding **F. H. Murray,** promoted; **Leo R. Laizure,** shop superintendent, at Hornell, N. Y., has been appointed master mechanic of the New York division and side lines, in charge of freight equipment, with headquarters at Secaucus, N. J., succeeding **Thomas S. Davey,** transferred; **Clarence H. Norton,** master mechanic of the Susquehanna, Tioga and Jefferson divisions, at Susquehanna, Pa., has been transferred as master mechanic to the Allegheny and Bradford divisions, with headquarters at Hornell, N. Y., succeeding A. J. Davis; **William Moore,** master mechanic of the Erie, at Kent, Ohio, has been transferred as

master mechanic to the Susquehanna, Tioga and Jefferson divisions, with headquarters at Susquehanna, Pa., succeeding Mr. Norton, transferred; **William E. Harmison,** assistant master mechanic of the Mahoning division at Brier Hill (Youngstown), Ohio, has been appointed master mechanic, with headquarters at Kent, succeeding Mr. Moore; **Ralph R. Munn** has been appointed assistant master mechanic of the Mahoning division, with headquarters at Brier Hill (Youngstown), Ohio, succeeding Mr. Harmison, and **Thomas S. Davey** has been appointed shop superintendent at Hornell, N. Y., vice L. R. Laizure, promoted.

Jacob Edgar Mechling, whose promotion to superintendent of motive power of the Pennsylvania Railroad, western lines, was announced in the *Railway Age*, July 26, was born at Butler, Pa., on November 29, 1863. Mr. Mechling was educated in the high school at his native town and in 1880 he entered the employ of the H. A. Porter Locomotive Works, at Pittsburgh, Pa., as a machinist's apprentice. In April, 1882, he entered the service of the Pennsylvania Railroad at Pittsburgh, as special apprentice. The following year and until May, 1886, he was employed by the Chicago, Milwaukee & St. Paul, following which he returned to the service of the Pennsylvania. Three months later he was promoted to gang foreman of the erecting shop, at Pittsburgh, and subsequently became assistant foreman at the shop, where he was first employed. Later he was made foreman of the new engine house at Wall, Pa., where he remained until May, 1902, at which time he was promoted to assistant master mechanic of the Pittsburgh division, with headquarters at Pittsburgh. Two years later he was promoted to master mechanic of the Vandalia, with headquarters at Terre Haute, Ind., which position he held until his appointment as superintendent of motive power as mentioned above.

J. E. Mechling

Purchasing

GOVERNMENT*

R. B. Pegram.—See Operating Officers.

J. W. Gerber, general storekeeper of the Southern Railway, with office at Washington, D. C., has been appointed general storekeeper also of the Alabama & Vicksburg, the Carolina, Clinchfield & Ohio, the Carolina, Clinchfield & Ohio of South Carolina, the Georgia Southern & Florida, and the St. Johns River Terminal, with headquarters at Washington, D. C.

Railway Officers in Military Service

R. W. Kennedy, assistant valuation engineer of the Atchison, Topeka & Santa Fe., at Topeka, Kan., has resigned to enter the United States army.

A. H. Rowan, assistant to vice president, traffic department, of the New York Central Lines, has been commissioned a Major in the Engineer Reserve Corps, U. S. Army, assigned to the Thirty-Sixth Engineers, and leaves immediately for service overseas.

J. M. Grant, engineer maintenance of way of the Chicago, Peoria & St. Louis, with headquarters at Springfield, Ill., has left that company, having been commissioned captain in the Engineer Officers' Reserve Corps and assigned to Camp Lee, Va. Mr. Grant has been with the Chicago & North Western, the Chicago, Milwaukee & St. Paul, the Chicago, Burlington & Quincy and since 1917 with the Chicago, Peoria & St. Louis.

Obituary

Charles Allen Goodnow

Charles Allen Goodnow, vice-president of the Chicago, Milwaukee & St. Paul, with office at Chicago, died at Seattle, Wash., on July 26, following a brief illness. Mr. Goodnow had been in active railway work for nearly half a century and was well-known as the man who was in charge of the greatest railroad electrification project so far undertaken. This work, outlined in considerable detail in the *Railway Age* of February 7, 1917, is remarkable for the rapid progress made and the results achieved in a relatively short period. The contracts for equipment and material for the first unit of the project, the line between Three Forks, Mont., and Deer Lodge, were awarded in November, 1914. This was the first step in the scheme involving the electrification of 440 miles of main line between Harlowton, Mont., and Avery, Idaho. The first 282-ton electric locomotive was placed on a test track in September, 1915, and in February, 1917, steam engines were removed from the entire electrified section. At the present time the electrification of the lines from Othello, Wash., to Seattle and Tacoma, is under construction. The electrification of this part of line is progressing very satisfactorily and according to statements issued by Mr. Goodnow shortly before his death, this section may be expected to be in service within less than a year.

C. A. Goodnow

Mr. Goodnow was widely known in the north Pacific territory as an operating officer. He made his first visit to Puget Sound in 1908, and developed an original plan for hauling cars on barges to nearby Puget Sound points. This installation proved so successful it was extended to Bellingham, Wash., Port Angeles, and Port Townsend, so that now the St. Paul's peninsula business is handled entirely by the barge system developed by Mr. Goodnow. He also constructed the Gallatin Valley Railway, a subsidiary of the St. Paul, which runs from Three Forks, Mont., to Bozeman, and he was president of that line. Among other interesting features of his active career were the making of the first time table for operation through the Hoosac tunnel; the introduction of two English staff machines for the protection of train movements over the Mississippi river bridge at Savannah, Ill., and the perfection of the manual block system as now in use on the St. Paul.

Mr. Goodnow was born at Baldwinsville, Mass., on December 22, 1853. He entered railway service in 1868 with the Vermont & Massachusetts as a telegraph operator. In 1875, he became train despatcher of the Troy & Greenfield and four years later was appointed trainmaster on the same road. From 1881 to 1886, he was superintendent of the New Haven & Northampton and in the latter year went to the Chicago, Milwaukee & St. Paul as superintendent of construction. In 1888, he was promoted to division superintendent, with headquarters at Dubuque, Iowa. He was later assistant general superintendent and general superintendent of the same road, and in April, 1902, was appointed general manager of the Chicago, Rock Island & Pacific. In November, 1903, he became general manager of the Chicago & Alton, with which line he remained about four years. From January 1, 1908, to January 1, 1913, he was assistant to the president of the Chicago, Milwaukee & Puget Sound. In this position he was in charge of various projects in connection with the extension of the Puget Sound lines, chief among which were the entrance of the St. Paul into Spokane, Wash., and into Great Falls, Mont. In 1913 he became assistant to the president of the Chicago, Milwaukee & St. Paul, with headquarters at Chicago, and in July, 1917, he was appointed vice-president of the same road at Chicago, which position he held until his death.